Communities and Local Government

English Housing Survey

Housing stock report 2008

ENGLISH HOUSING SURVEY

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October 2010
Department for Communities and Local Government

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The Office for National Statistics (ONS) who undertook initial development work on the household questionnaire and sample design.

ONS manages the EHS on behalf of the Department and undertakes the household interviews and the subsequent data validation and creation of derived analytical measures. It also has responsibility for the sampling and weighting of the datasets and for the running of the Market Value Survey and is involved in the production of tables and analytical reports.

ONS work in partnership with **Miller Mitchell Burley Lane (MMBL)** who undertake the visual inspection of the properties. MMBL employ and manage a large field force of professional surveyors who work in close co-operation with the ONS interviewers to maximise response rates and deliver high quality data.

The Building Research Establishment (BRE) which is the development partner of the Department for the EHS. BRE helps develop the physical survey questionnaire and surveyor training materials, and delivers the surveyor training sessions. BRE has also had responsibility for developing and implementing a new automated data collection and validation process for the physical survey. It is involved in analysing the data and developing and running models to create key measures and analytical variables for the survey, and reporting the findings.

The Valuation Office Agency (VOA) who provide market valuations for a sub-sample of the EHS properties and information on the local area and housing market.

The **interviewers and surveyors** who collect information from households and carry out the visual inspection.

The **households** who take part in the survey.

Introduction

1. In April 2008 the English House Condition Survey was integrated with the Survey of English Housing to form the English Housing Survey (EHS). The first results from the EHS were published in the *English Housing Survey Headline Report 2008–09*[1] in February 2010. This report follows on from those headline results and provides the first detailed Housing Stock Report from the new survey.

2. In parallel to this report, an EHS Household Report has also been published which presents results about household circumstances and attitudes to housing.

3. The Housing Stock Report begins (Chapter 1) by looking at the housing stock profile (including age, type and size) before providing an analysis of the amenities and services provided by the stock in the second chapter. Chapter 3 focuses on the external environment around people's dwellings. Chapter 4 looks at housing conditions in relation to disrepair, damp and mould, and the Housing Health and Safety Rating System. There are two chapters relating to the energy performance of dwellings. Chapter 5 looks at the uptake of heating and insulation measures in the housing stock and its current performance in terms of energy efficiency and the carbon emissions (CO_2) associated with heating, lighting and ventilating the home. Chapter 6 focuses on further cost effective improvements that could be carried out and the impact these could make for energy efficiency and carbon emissions. The final chapter of the report identifies the extent to which a range of different household groups experience poor living conditions.

4. Summary statistics for the key measures of condition and energy performance and detailed Annex Tables underpinning diagrams can be found alongside this report on the EHS website. These tables provide further detailed data including underpinning data for the Figures within the chapters. There are references to these Annex Tables throughout the text of this report.

5. As with the previous English House Condition Survey (EHCS), the 2008 EHS has three component surveys: a household interview, followed by a physical inspection and a market value survey of a sub sample of the properties. The sampling and grossing design of the English Housing Survey differs in some ways from the surveys it replaced and these changes are summarised in Appendix A of this report. Further methodological and technical details will be published in the EHS Technical Advice Notes.

6. Results for the EHS Housing Stock Report are presented for '2008' and are based on survey fieldwork carried out between April 2007 and March 2009 (a mid-point of April 2008). The sample comprises of 16,150 occupied or vacant dwellings where a physical inspection was carried out. This is referred to as the

[1] http://www.communities.gov.uk/publications/corporate/statistics/ehs200809headlinereport

'dwelling sample' throughout the report. There are 15,523 cases where as well as a physical inspection, an interview with the household was also secured. This is referred to as the **'household sub-sample'**.

7. Each estimate from the survey (as with all sample surveys) has a margin of error associated with it arising from sampling and design effects and from measurement error. Details of standard errors and confidence intervals for key variables are provided in Appendix B. Caution needs to be exercised in interpreting some details, as differences may not always be statistically significant. Text draws attention only to differences that are significantly different at the 95% confidence interval.

9. Information on the English Housing Survey can be accessed via this link http//www.communities.gov.uk/housing/housingresearch/housingsurveys/ Information and past reports on the Survey of English Housing and the English House Condition Survey can also be accessed via this link. The dataset will be made available to users via the UK Data Archive, http://www.data-archive.ac.uk/

10. If you have any queries about this report or would like any further information please contact ehs@communities.gsi.gov.uk

11. **Responsible Statistician**: Meg Green, Deputy Director of Housing Analysis and Surveys Division. Contact via ehs@communities.gsi.gov.uk

Chapter 1
Stock profile

This chapter presents a brief overview of the dwelling stock examining the age, type, size and location of dwellings in England. It also contains more detailed analysis of the construction types and the materials used for key building components like roofs and windows.

Key findings

- **In 2008 there were around 22.2 million dwellings in England. Some 15 million dwellings were owner occupied and 3.3 million were privately rented. The remaining 3.9 million were fairly evenly divided between local authorities and housing associations.**
- **One in five (21%) dwellings were built before 1919 although three quarters of these older dwellings have been subject to at least some major alterations since they were built and 43% have had extensions or loft conversions added. Dwellings built after 1990 accounted for just 12% of the stock.**
- **The majority (81%) of dwellings were houses or bungalows; most of these being two storey houses. Flats made up 19% of the stock, although this was far higher in the social sector where over 40% of dwellings were flats.**
- **The average useable floor area of dwellings in England was 91m^2. However some 52% of social sector bungalows, 50% of social sector flats and 35% of private rented flats had a total floor area of less than 50m^2.**
- **Just over one million dwellings were vacant at the time of survey; the majority of these (85%) were privately owned. The vacancy rate amongst flats was roughly double that for houses (8% compared with 4%).**
- **One in ten dwellings had attics (either as built and loft conversions) and most of these were private sector houses. Some 54,000 flats had all of their rooms in an attic making them more susceptible to summer overheating.**
- **Virtually all (95%) dwellings were of traditional masonry or timber construction; the majority of these were cavity brick/block. Non-traditional construction is often seen as synonymous with social housing but half (50%) of these dwellings were actually in the private sector.**

- **The vast majority of dwellings (93%) had pitched roofs and the most common roofing material was concrete tile (58%). Some 13% of dwellings had a natural slate or stone roof and this rose to 39% for dwellings built before 1919. Dwellings in the northern regions were also more likely to have natural slate roofs than those located elsewhere.**
- **Over two thirds of dwellings (69%) had windows that were all or mainly double glazed PVC-U. Dwellings built before 1919 and those located in London and the South East and in city centres or village centres and isolated rural areas were the most likely to have single glazed windows.**

Tenure

1.1 In 2008, there were around 22.2 million dwellings in England, Table 1.1. Some 15 million dwellings (67%) were owner occupied while 3.3 million were privately rented (15%). The social sector accounted for the remaining 3.9 million dwellings which were fairly evenly divided between local authorities and housing associations.

Table 1.1: Stock profile, 2008

all dwellings

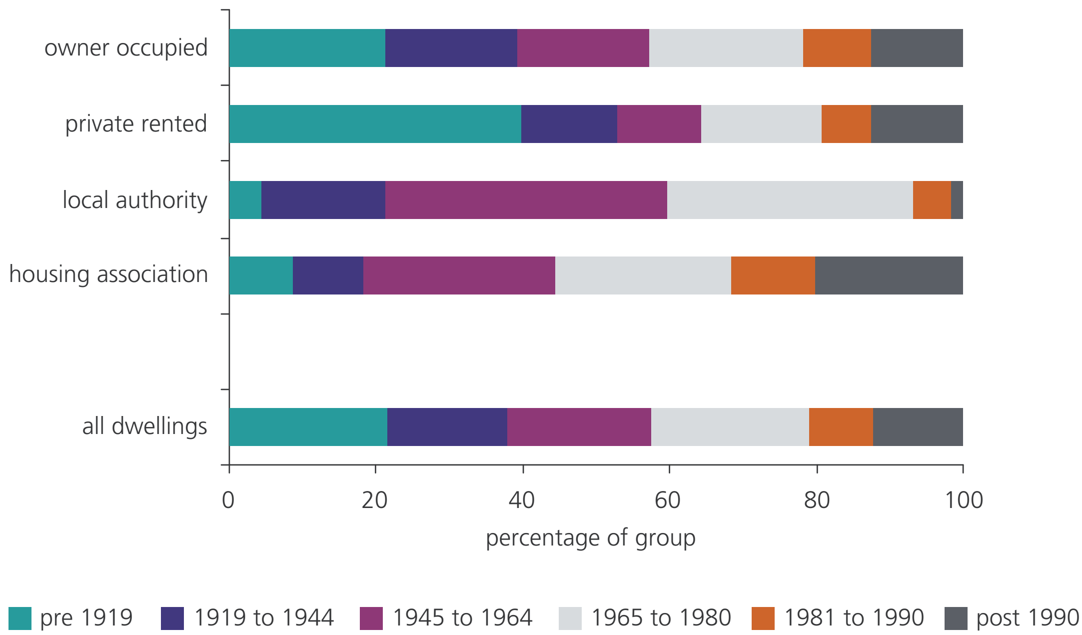
	owner occupied	private rented	local authority	housing association	total
				percentage of dwellings within tenure	
dwelling age					
pre 1919	21.3	39.7	4.3	8.7	21.4
1919–1944	17.9	13.1	16.9	9.6	16.4
1945–1964	18.0	11.6	38.3	26.2	19.6
1965–1980	21.0	16.2	33.5	23.9	21.6
1981–1990	9.3	6.7	5.4	11.4	8.8
post 1990	12.5	12.6	1.5	20.2	12.2
dwelling type					
small terraced house	8.1	16.6	9.7	11.1	9.8
medium/large terraced house	19.1	18.6	16.8	19.1	18.8
semi-detached house	30.1	16.9	18.4	18.0	26.0
detached house	23.8	8.1	0.3	0.9	17.4
bungalow	10.3	4.0	8.8	12.1	9.4
converted flat	1.9	13.0	1.9	3.9	3.7
purpose built flat, low rise	6.2	21.4	36.5	32.1	13.4
purpose built flat, high rise	0.5	1.5	7.7	2.9	1.5
useable floor area					
less than 50 m^2	4.9	19.8	27.7	27.4	11.2
50 to 69 m^2	19.4	31.2	36.6	34.8	24.0
70 to 89 m^2	29.1	27.0	29.0	28.3	28.7
90 to 109 m^2	17.5	9.8	5.1	6.8	14.3
110 m^2 or more	29.0	12.2	1.6	2.6	21.8
level of local area deprivation					
most deprived 20% areas	12.7	20.5	54.4	40.6	20.0
2nd	17.8	24.6	25.3	25.9	20.2
3rd	21.2	20.8	11.1	16.3	19.8
4th	24.1	18.8	6.0	11.9	20.6
least deprived 20% areas	24.2	15.3	3.1	5.4	19.4
all dwellings	**15,007**	**3,296**	**1,984**	**1,951**	**22,239**

Base: all dwellings
Source: English Housing Survey 2008, dwelling sample.

Dwelling age

1.2 England has one of the oldest dwelling stocks in Europe with 21% of dwellings built before 1919 and 16% built between 1919 and 1945. The vast majority (95%) of dwellings built before 1919 were privately owned. However, it is important to remember that most of these older dwellings have undergone major modifications since they were first built and this is covered in more detail later in this chapter. The age composition of the four main tenures was very different. The private rented sector contained the highest proportion of pre 1919 dwellings (40%), Figure 1.1. However, some 13% of private rented dwellings were built after 1990. The bulk (72%) of local authority dwellings dated from 1945–1980 with just 4% built before 1919. The housing association sector contained the highest proportion of newer dwellings built after 1990 (20%) although half of the dwellings in this sector dated from 1945–1980; many of the dwellings dating from this period were stock transferred from local authorities through Large Scale Voluntary Transfer.

Figure 1.1: Dwelling age by tenure, 2008

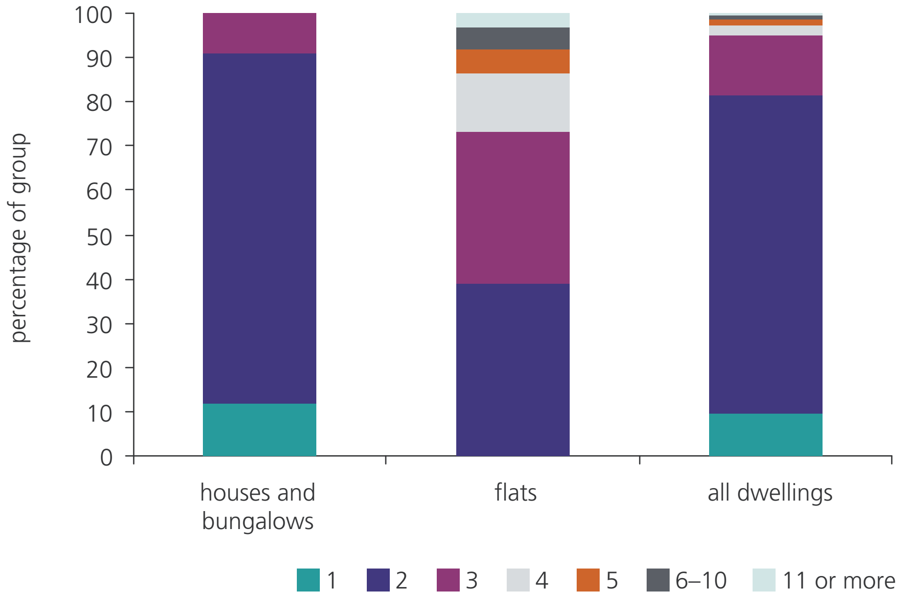


Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 1.1
Source: English Housing Survey 2008, dwelling sample

Dwelling type

1.3 About one in five (19%) dwellings were flats with the rest being houses and bungalows. Looking at houses, the vast majority (80%) consisted of two storeys above ground, some 11% were bungalows and 9% had 3 or more storeys, Figure 1.2. The majority of flats were in blocks of less than six storeys with just 8% in blocks that were higher than this. Around 1.5 million flats (37%) were situated at ground floor level.

Figure 1.2: Number of storeys above ground by dwelling type, 2008



Base: all dwellings
Notes:
1) for flats, storey relates to the height of the block and not the floor level of the flat
2) underpinning data are presented in Annex Table 1.2
Source: English Housing Survey 2008, dwelling sample.

1.4 Overall, about 340,000 (2% of all dwellings) had at least some of their rooms in a basement (see Annex Table 1.21). The EHS only counts basements that have a permanent staircase, a complete floor at least 1m below ground level and natural lighting in habitable rooms[2]. The majority (75%) of dwellings with basements were houses. Most of these houses with basements were owner occupied (85%) and two thirds (67%) were built before 1919. Of the 84,000 flats with basements, 75% had all of their rooms located in the basement.

1.5 It was much more common for dwellings to have attics – one in ten (2.3 million) had at least some of their rooms in an attic. These are rooms in the roof with a permanent staircase, natural lighting and a permanent floor which may have formed part of the original construction, as shown in Figure 1.3, or had been created by a later loft conversion.

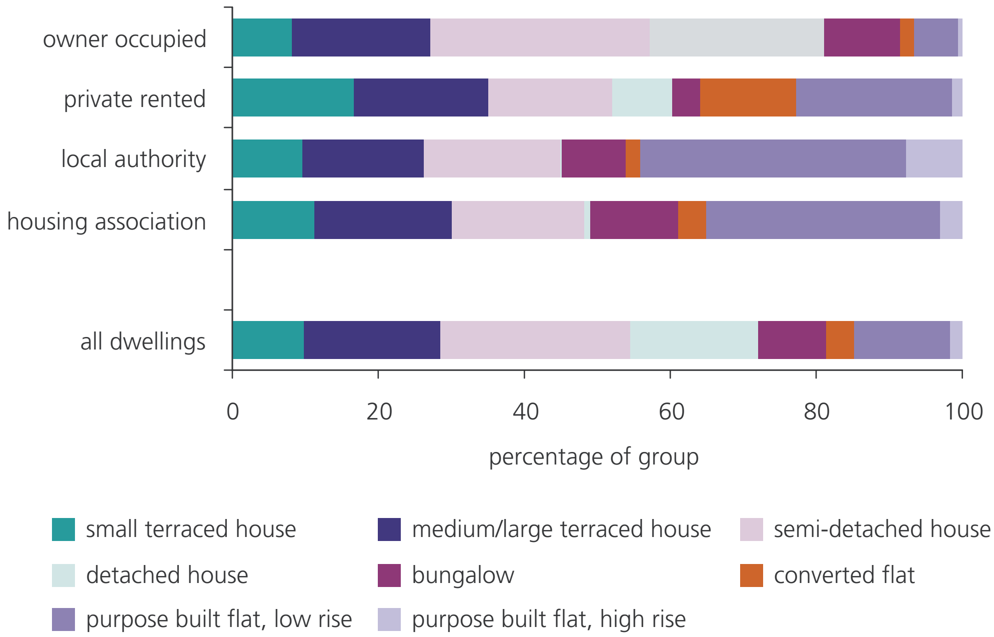
[2] Habitable rooms include living rooms, dining rooms, bedrooms and kitchens used for dining

Figure 1.3: Block of flats with rooms built into the roof as part of the original design

1.6 The majority of dwellings with attics were houses (93%) (see Annex Table 1.21). Most of the houses with attics were owner occupied (86%) and 43% were built before 1919. Most of the flats with attics had only some of their rooms located on the attic floor. It is estimated that there were about 63,000 flats where all of the rooms were located in the attic. Unless the roof is well insulated and the windows are well-designed, these attic flats would be more prone to overheating in the summer than other types of dwelling.

1.7 The different tenures had a rather different mix of dwelling types. Purpose-built flats were much more common in the social sector where they represented over 40% of all dwellings. Just 10% of dwellings in the private sector were of this type, Figure 1.4. Some 13% of private rented dwellings were converted flats and around half (52%) of all converted flats were found in the private rented sector. The owner occupied sector was dominated by houses; particularly semi detached or detached houses which made up 54% of dwellings in this sector.

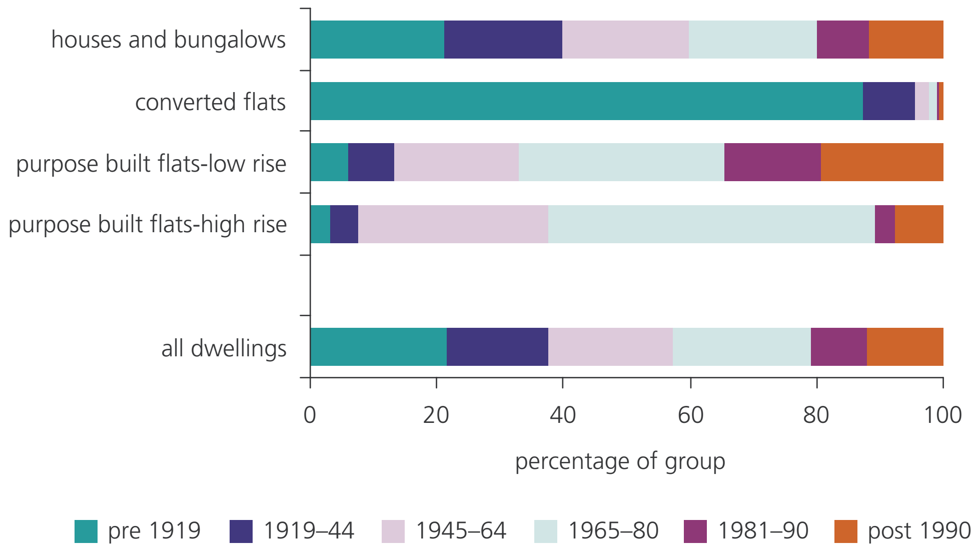
Figure 1.4: Dwelling type by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 1.1
Source: English Housing Survey 2008, dwelling sample

1.8 The type of dwelling was closely linked to dwelling age, with nearly nine tenths of converted flats built before 1919. In contrast, over 60% of all purpose built flats were built after 1965. The age of houses and bungalows was much more evenly spread across the six age bands, Figure 1.5.

Figure 1.5: Dwelling type by dwelling age, 2008

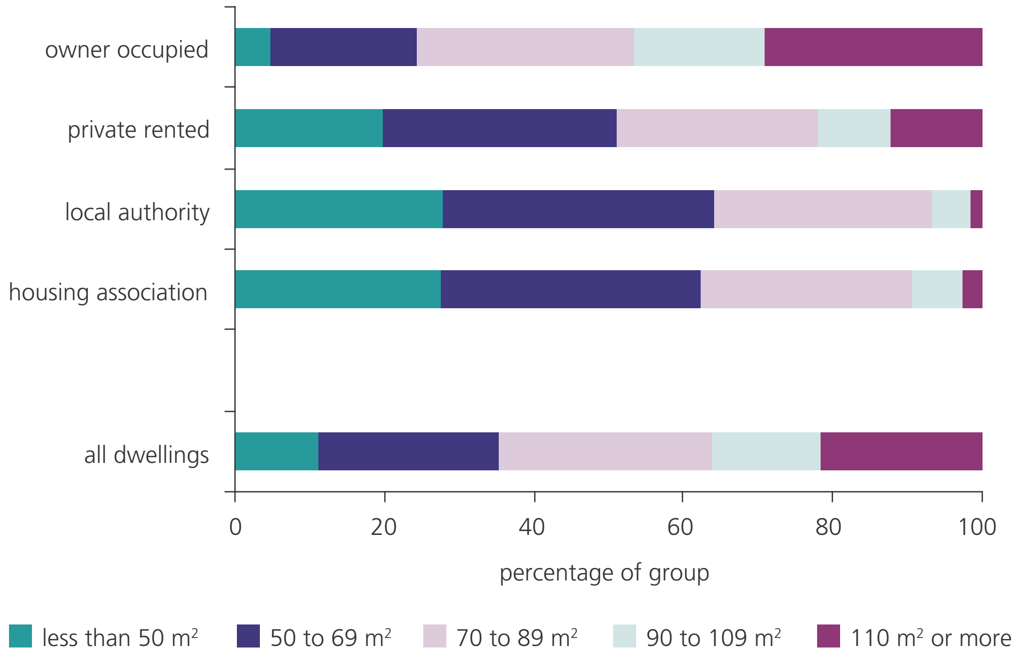


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.3
Source: English Housing Survey 2008, dwelling sample

Dwelling size

1.9 The average (mean) total useable floor area of dwellings in England was 91.2m². The size of dwellings varied considerably by both tenure and type of dwelling. Across the stock as a whole, around 11% of dwellings had a useable floor area of less than $50m^2$ but this rose to 27% for social rented dwellings and was just 5% for owner occupied dwellings, Figure 1.6. Just over one in five (22%) of dwellings had a useable floor area of at least $110m^2$ and the vast majority of these (98%) were in the private sector.

Figure 1.6: Total useable floor area by tenure, 2008

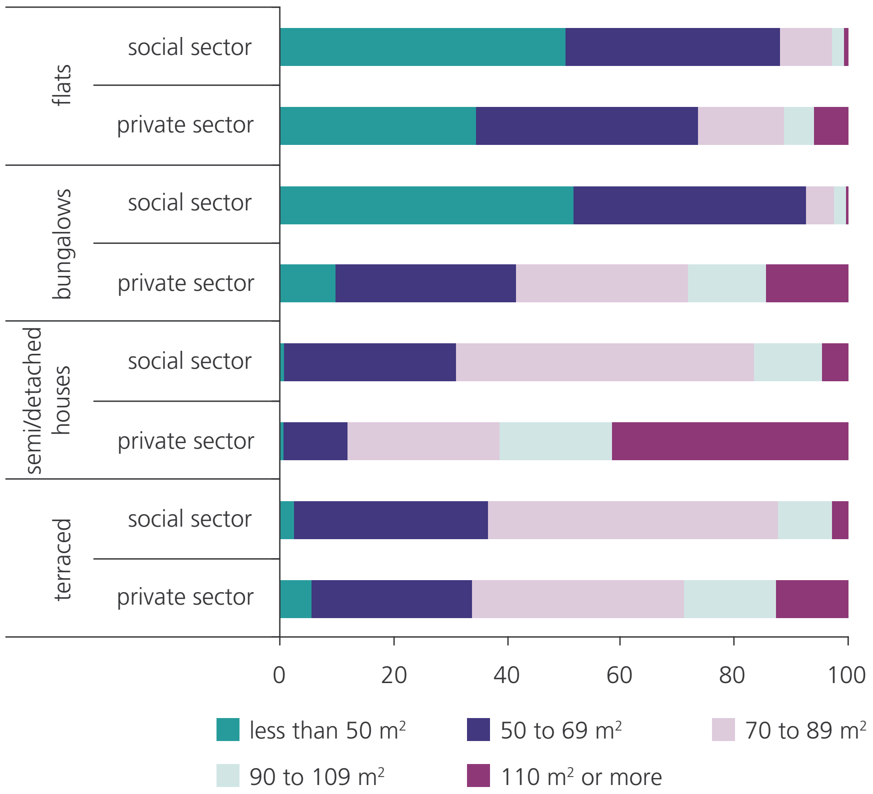


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.1
Source: English Housing Survey 2008, dwelling sample

1.10 Dwelling type was strongly related to floor area. Some 41% of flats had a total floor area of less than $50m^2$ compared with just 1% of semi-detached houses and 5% of terraced houses.

1.11 However, the same types of dwelling were generally much larger in the private sector than in the social sector. This was particularly true for bungalows and for semi-detached and detached houses. Social sector bungalows tended to be small 1-bedroom dwellings and over half (52%) were under $50m^2$ and just 2% were $90m^2$ or more in area. Private sector bungalows were much more mixed in terms of size with only 10% under $50m^2$ and 29% with a floor area of at least $90m^2$. The size of terraced houses varied far less by sector than for any other dwelling type.

Figure 1.7: Total useable floor area by dwelling type and tenure, 2008

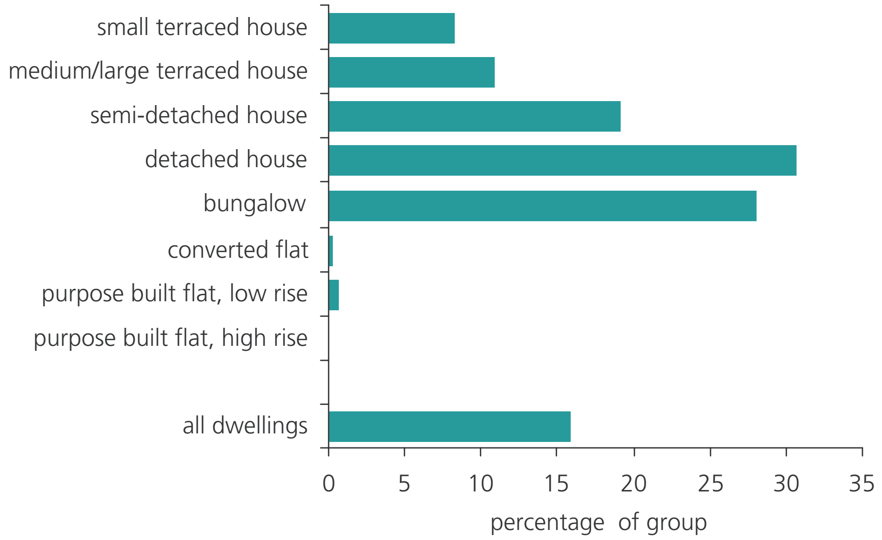


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.1
Source: English Housing Survey 2008, dwelling sample

1.12 The floor areas detailed above do not include any conservatories. Around one in six (16%) dwellings had a conservatory – virtually all of these (99%) were in the private sector. On average, these conservatories were about $10m^2$ in area and the vast majority (92%) of them had a door into the adjoining room rather than forming part of a larger open-plan room. Detached houses and bungalows were more likely to have conservatories than other types of dwelling (31% and 28% respectively), Figure 1.8.

1.13 Dwellings in rural areas were also much more likely to have conservatories. About a quarter (24%) of rural dwellings had conservatories compared with 17% in suburban areas and 7% in urban and city centres.

Figure 1.8: Conservatories and dwelling type, 2008

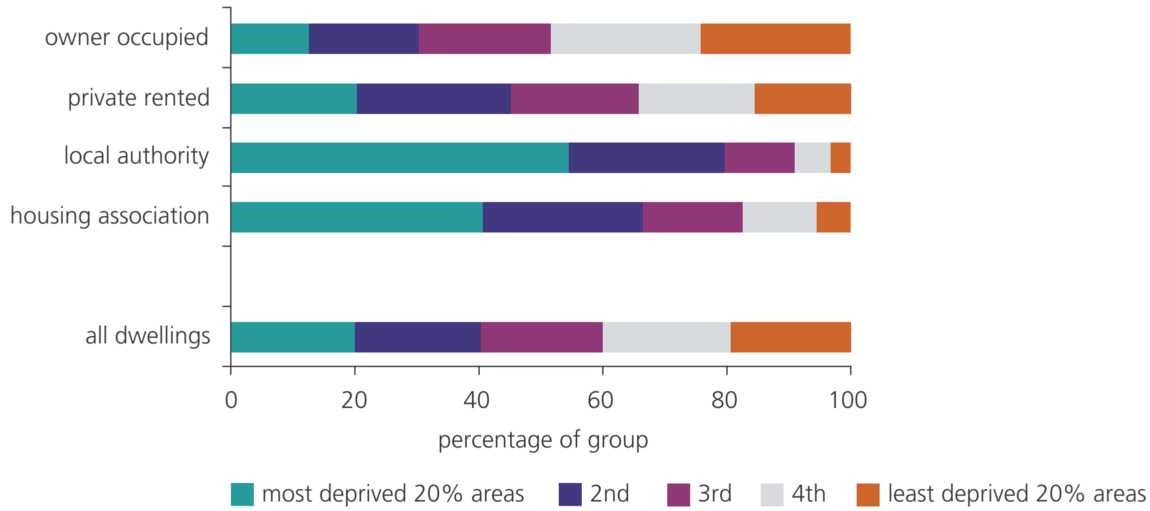


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.4
Source: English Housing Survey 2008, dwelling sample

Local area deprivation

1.14 Deprivation was strongly related to tenure. Just over one in eight (13%) of owner occupied dwellings were located in the most 20% of deprived areas compared with over half of local authority dwellings (54%) and over two fifths of housing association dwellings (41%). In contrast, private rented dwellings were more evenly spread across each of the deprivation bands, Figure 1.9.

Figure 1.9: Level of local area deprivation by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 1.1
Source: English Housing Survey 2008, dwelling sample

1.15 There was also a strong correlation between dwelling size and deprivation. Only 5% of dwellings in the most deprived areas were over $110m^2$ in area compared with 40% in the least deprived areas, Figure 1.10.

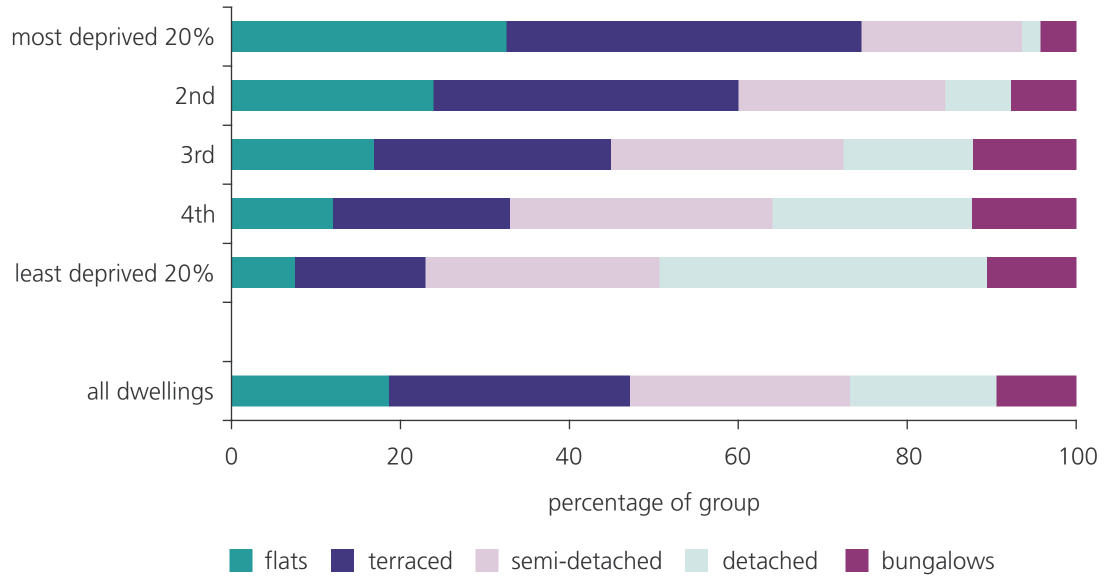
Figure 1.10: Total useable floor area by local area deprivation, 2008

Base: all dwellings
Note: underpinning data are presented in Annex Table 1.1
Source: English Housing Survey 2008, dwelling sample

1.16 This relationship between dwelling size and deprivation is largely a result of the dwelling type mix in different areas. Whilst flats and terraced houses together made up under half of dwellings (48%) within the whole dwelling stock, they accounted for 75% of all dwellings in the most deprived 20% of areas. In contrast these types of dwellings represented just under a quarter of dwellings (23%) in the least deprived 20% of areas. Only 3% of detached dwellings were located in the most 20% of deprived areas compared with 43% in the least deprived 20% of areas.

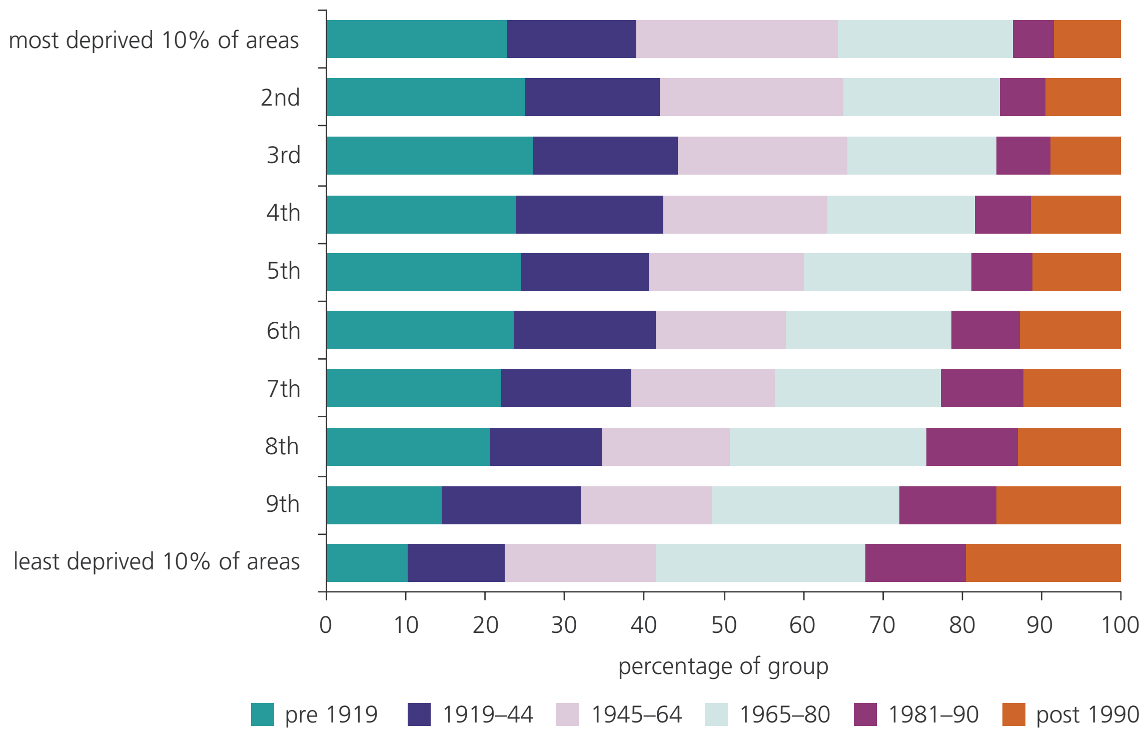
1.17 The relationship between deprivation and dwelling age is rather more complex. Although the most deprived areas contain a higher proportion of pre 1919 dwellings than the least deprived, the proportion of older dwellings is very similar in deciles 1 to 8 – it is only markedly lower for the least deprived 20% of areas, Figure 1.12. However, the proportion of dwellings built after 1990 increases steadily as deprivation reduces. Only 8% of dwellings in the most deprived 10% of areas were built after 1990 compared with 19% in the least deprived 10% of areas.

Figure 1.11: Level of local area deprivation by dwelling type, 2008



Source: English Housing Survey 2008, dwelling sample
Note: underpinning data are presented in Annex Table 1.5
Base: all dwellings

Figure 1.12: Level of local area deprivation by dwelling age, 2008

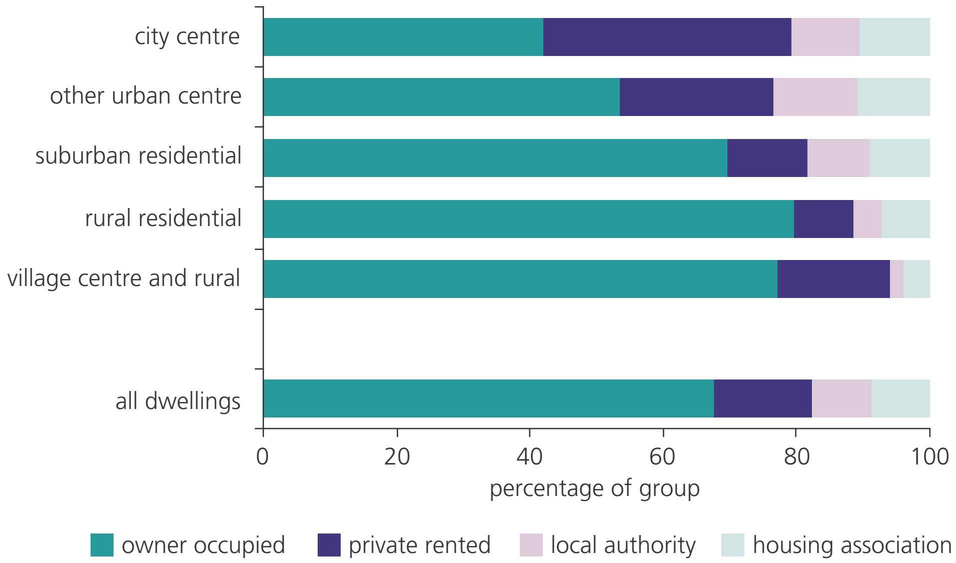


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.8
Source: English Housing Survey 2008, dwelling sample

Type of area

1.18 Around 13.2 million dwellings (59%) were located in suburban residential areas with some 4.9 million (22%) dwellings in city or urban centres and 4.1 million (19%) in rural areas. Almost half (48%) of all dwellings in city and urban centre areas were rented with roughly half of these rented by private landlords and half by social landlords, Figure 1.13. Renting was far less common in rural areas; especially social renting. Just 6% of dwellings in village centres and isolated rural areas and 11% in rural residential areas were owned by social landlords.

Figure 1.13: Type of area by tenure, 2008

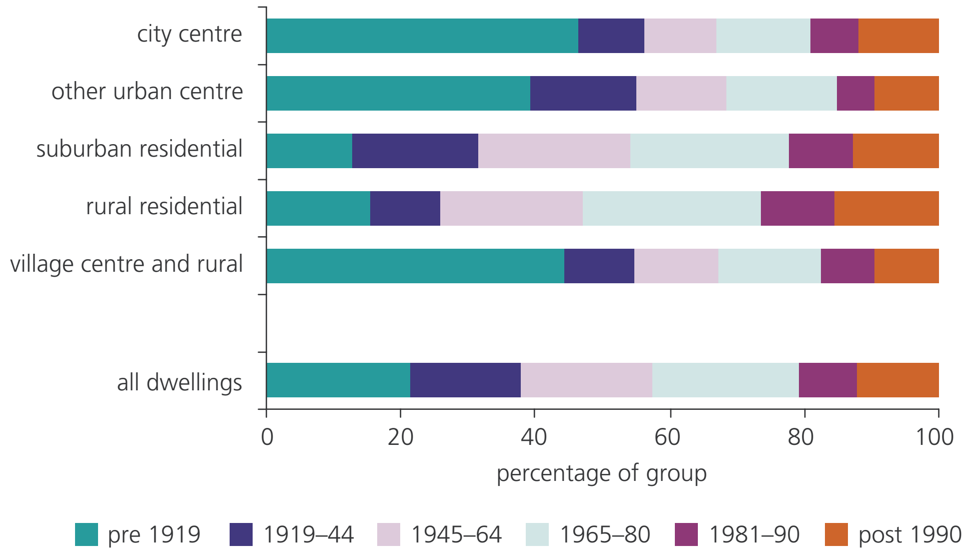


Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 1.1
Source: English Housing Survey 2008, dwelling sample

1.19 The age mix of stock varied considerably by type of area. City centre and village locations had the highest proportion of dwellings built before 1919 (47% and 44% respectively), Figure 1.14. Dwellings in suburban areas and rural residential areas tended to be newer – 68% of the dwellings in suburban areas and 74% of those in rural residential areas were built after 1944.

1.20 There were also large variations in the mix of dwelling types in different areas. Only 4% of dwellings in village centres and isolated rural areas and 6% in rural residential areas were flats compared with 63% of those in city centres and 32% in other urban centres, Figure 1.15. One in five (20%) of dwellings in city centres were converted flats. The most common type in suburban areas was semi-detached houses, whereas in rural areas, detached houses were more common. One in five (22%) of dwellings in rural residential areas and 17% in village locations were bungalows.

Figure 1.14: Type of area by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 1.9
Source: English Housing Survey 2008, dwelling sample

Figure 1.15: Type of area by dwelling type, 2008

Base: all dwellings
Note: underpinning data are presented in Annex Table 1.10
Source: English Housing Survey 2008, dwelling sample

Vacancy

1.21 Just over one million dwellings were vacant at the time of survey; the majority of these (85%) were privately owned. Although flats only represented 19% of all dwellings, a third of all vacant dwellings were flats. The vacancy rate amongst flats was roughly double that for houses (8% compared with 4%). Vacancy rates were particularly high in the private rented sector at 13%[3]. This arises partly because there is a much higher turn round of occupants in this sector than for owner occupation or social renting[4]. Over a third (38%) of all private tenants had lived in their current home for less than a year compared with 8% of social renters and 5% of owner occupiers.

Figure 1.16: Vacancy by tenure, 2008

Base: all dwellings
Note: underpinning data are presented in Annex Table 1.20
Source: English Housing Survey 2008, dwelling sample

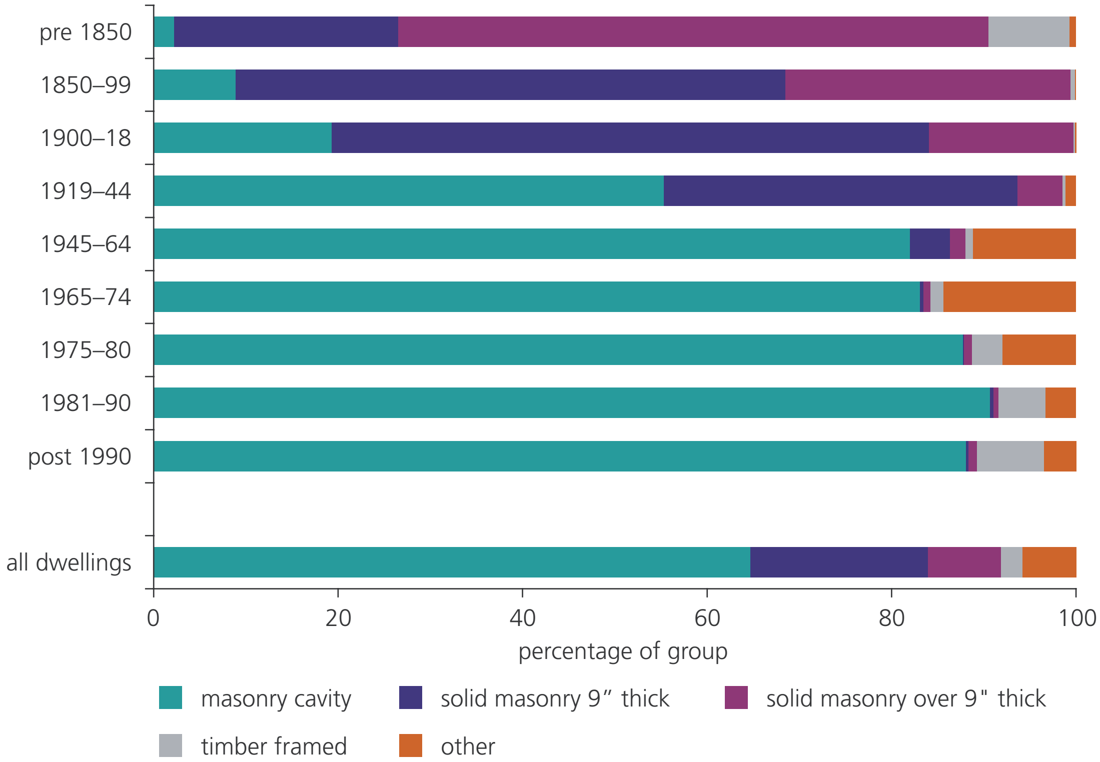
Construction type and materials

1.22 The construction methods and materials used in building flats and houses have changed significantly over time but they have always been dominated by masonry (brick, block, stone and flint). Cavity masonry has replaced solid masonry as the main construction type and accounts for 88% for all dwellings built after 1990, Figure 1.17. Some 9% of dwellings dating from before 1850 were built with a traditional timber frame. However it is likely that considerably more were built in this way because the dwellings that are still standing today are not representative of all of those that were built before this date. The use of timber frame declined rapidly until modern factory-built systems were developed in the 1970's and it accounts for 7% of dwellings built after 1990. Immediately after the second world war, the use of concrete and steel increased and a number of prefabricated systems were developed in response to the need to build large numbers of dwellings very quickly. These are generally referred to

[3] In the private sector, the 'tenure' assigned to vacant dwellings relates to the previous occupancy.
[4] The companion EHS Annual Household Report 2008/09, reports 36% of all private tenants had lived in their current home for less than a year, compared with 8% of social renters and 4% of owner occupiers.

as 'non-traditional' construction[5]. However, the popularity of the prefabricated systems declined as serious structural and other defects started to appear in some of these dwellings leading to 'defective dwelling' designation for the most problematic types[6]. By 2008, most of these designated defective dwellings had either been demolished or had major structural repairs and replacements carried out.

Figure 1.17: Construction type by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 1.6
Source: English Housing Survey 2008, dwelling sample

1.23 Looking in detail at the stock in 2008, 95% of it was 'traditionally built' using masonry or timber as the main structural component, Table 1.2. Almost two thirds (65%) of all dwellings were traditional cavity construction where all of the external walls are load bearing. The external walls consist of two leaves of brickwork or block-work with a cavity in between which is typically around 70mm wide although the width varies by both dwelling age and location. The two leaves are held together by wall ties and the cavity may contain insulation – either built-in or added later.

[5] There are different definitions of 'non-traditional' – here we have taken any building where the load bearing structure is concrete or steel.
[6] See the Housing Defects Act, 1984

1.24 The next most common type was solid masonry (27%) where the external load-bearing walls are made of brick, block, stone or flint with no cavity. However, these are not a homogenous group of 'problem' dwellings with respect to energy efficiency. Although about 70% of all dwellings with solid walls have walls that are just 9″ thick and offer very poor thermal performance unless additional insulation is added, the remaining 30% have thicker walls. In some cases they will be traditional stone built dwellings with walls that are 18–24″ thick. Many of the 'solid wall' dwellings had been extended and most of the more recent extensions would have been built in cavity brick or block. Although timber framed systems have grown in popularity over the past 30 years or so, only about 2% of dwellings as at 2008 were actually of this type.

Table 1.2: Number and proportion of dwellings built using different methods, 2008

all dwellings

	number (000s)	percentage		number (000s)	percentage
traditional construction			**non-traditional construction**		
masonry cavity	14,387	64.7	in situ concrete boxwall and crosswall	242	1.1
masonry solid – 9″ thick	4,230	19.0	in situ concrete frame	434	2.0
masonry solid – over 9″ thick	1,813	8.2	pre cast concrete (panels and frame)	265	1.2
masonry – crosswall	203	0.9	metal frame	124	0.6
timber frame – old (pre 1919)	79	0.4	other	22	0.1
timber frame – new (post 1919)	440	2.0			
all traditional	**21,152**	**95.1**	**all non-traditional**	**1,087**	**4.9**

Base: all dwellings
Source: English Housing Survey 2008, dwelling sample

1.25 'Non-traditional' construction methods had been used for the remaining 5% of the stock. The most common types of non-traditional construction were in-situ concrete frames, in-situ concrete boxwall (e.g. Wimpey no-fines) and steel framed.

1.26 Non-traditional forms of construction are often thought of as being mainly for flats, however some 40% of these dwellings were actually houses. A large proportion of these houses have been overclad and some of the pre-cast concrete system-built dwellings have had major structural replacement works carried out. Many of these were originally built by social landlords and half (50%) were still in the social rented sector. Almost half (46%) were located in the south east regions.

Figure 1.18: A purpose-built block of flats with in-situ concrete frame

Figure 1.19: A typical concrete boxwall dwelling

1.27 Because the majority of dwellings were of traditional brick construction, by far the most common type of wall finish was pointed brickwork. Three quarters of all dwellings had this as the predominant type of wall finish. One in five (19%) dwellings were mainly rendered, although an additional 20% had rendering covering less than half of the wall surface. Dwellings built between 1919 and 1945 were the most likely to be rendered – some 40% of dwellings dating from this period had rendering as the predominant wall finish, Table 1.3. Rendering was also more common in village centres and isolated rural areas with 30% of dwellings in these locations having rendering as the main wall finish.

Table 1.3: Predominant type of wall finish by dwelling age, 2008

all dwellings

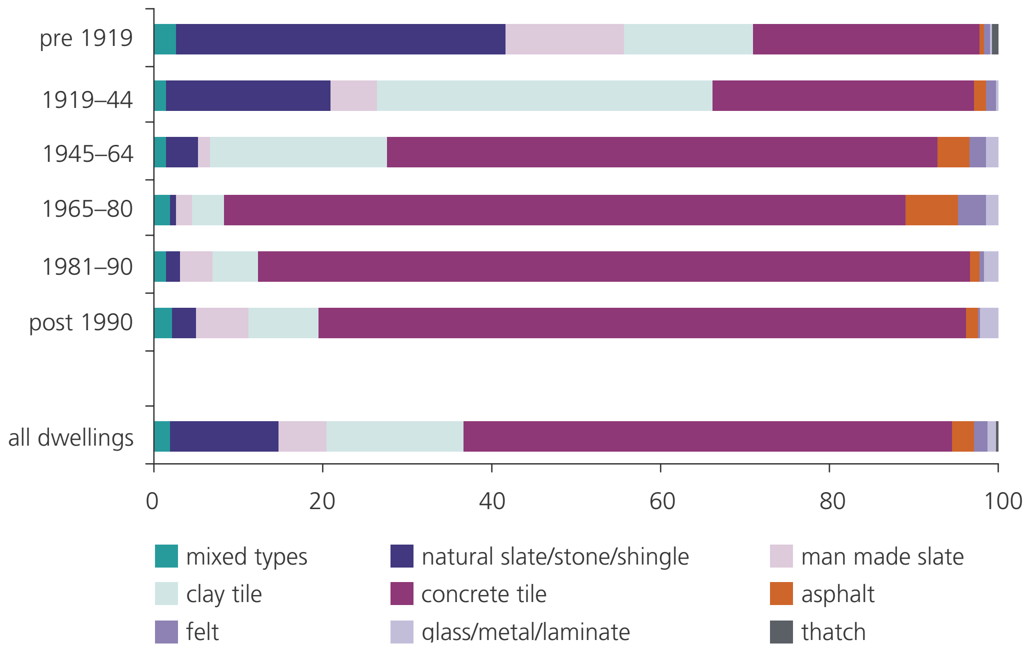
	mixed types	masonry pointing	non-masonry natural	rendered	other type	total
						thousands of dwellings
pre 1919	365	3,259	27	1,084	25	**4,760**
1919–44	168	2,002	11	1,451	10	**3,642**
1945–64	144	3,260	63	826	70	**4,363**
1965–80	124	4,048	53	443	145	**4,814**
1981–90	52	1,727	3	156	16	**1,953**
post 1990	39	2,429	4	191	45	**2,708**
all dwellings	**893**	**16,725**	**161**	**4,150**	**310**	**22,239**
						percentage of dwellings
pre 1919	7.7	68.5	0.6	22.8	0.5	**100**
1919–44	4.6	55.0	0.3	39.8	0.3	**100**
1945–64	3.3	74.7	1.4	18.9	1.6	**100**
1965–80	2.6	84.1	1.1	9.2	3.0	**100**
1981–90	2.7	88.4	0.1	8.0	0.8	**100**
post 1990	1.5	89.7	0.2	7.0	1.7	**100**
all dwellings	**4.0**	**75.2**	**0.7**	**18.7**	**1.4**	**100**

Base: all dwellings
Note: 'other type' includes shiplap timber, tile hung, slip/tile faced, and wood/metal/plastic panels
Source: English Housing Survey 2008, dwelling sample

1.28 The vast majority of dwellings (93%) had pitched roofs. Only high rise flats were more likely to have had predominantly flat roofs (88%). Many dwellings have had extensions added over the years or were built with different types of roof. Although only 4% of dwellings had a roof that was wholly or mainly flat, 23% of dwellings had some part of the roof that was flat. The most common type of roof covering was concrete tiles with 58% having this as the main roof covering material, Figure 1.20. About 1 in 6 (16%) had clay tile roofs and 13% had natural slate or stone roofs. Around 300 thousand dwellings had a thatched roof.

1.29 The type of roof covering varied considerably by dwelling age. Some (39%) dwellings built before 1919 had natural slate roofs and clay tile was the most common material for dwellings built between 1919 and 1945.

Figure 1.20: Predominant type of roof covering by dwelling age, 2008

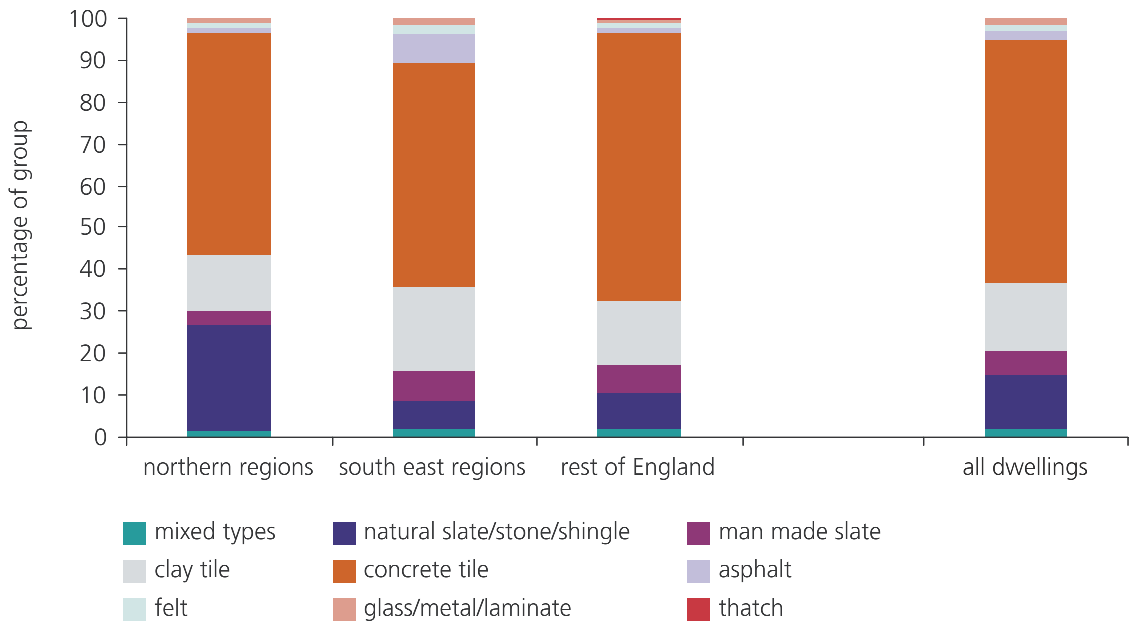


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.12
Source: English Housing Survey 2008, dwelling sample

1.30 Roofing materials also varied by location. A quarter (25%) of dwellings in the northern regions had natural slate roofs compared with just 6% in the south east regions and 9% in the rest of England, Figure 1.21. The south east regions had a much higher proportion of asphalt and felt roofs; largely because of the high percentage of high rise flats in London.

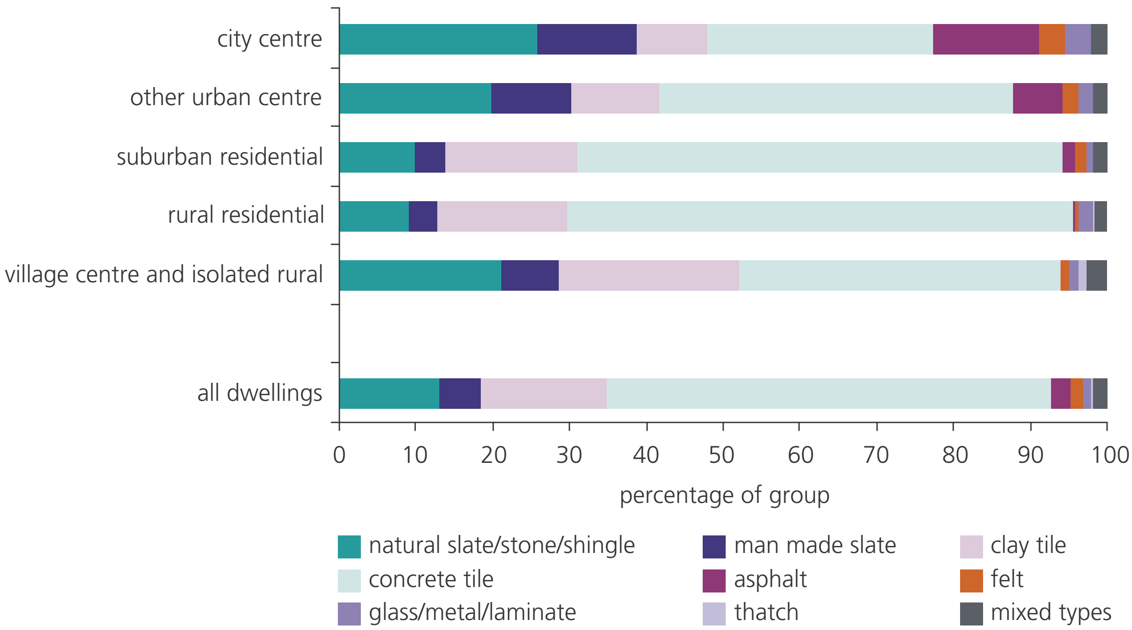
1.31 Roof covering materials also vary considerably by type of area – partly due to the dwelling age profile of the different types of areas. City centres which have a very high proportion of both pre 1919 dwellings and more modern flats had the highest proportion of dwellings with both natural slate and asphalt roofs, Figure 1.22. Dwellings in other urban centres and in village centres and isolated rural areas were also more likely to have natural slate roofs than those in suburban or rural residential locations.

Figure 1.21: Predominant type of roof covering by region, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 1.13. See Glossary for details of regional groups
Source: English Housing Survey 2008, dwelling sample

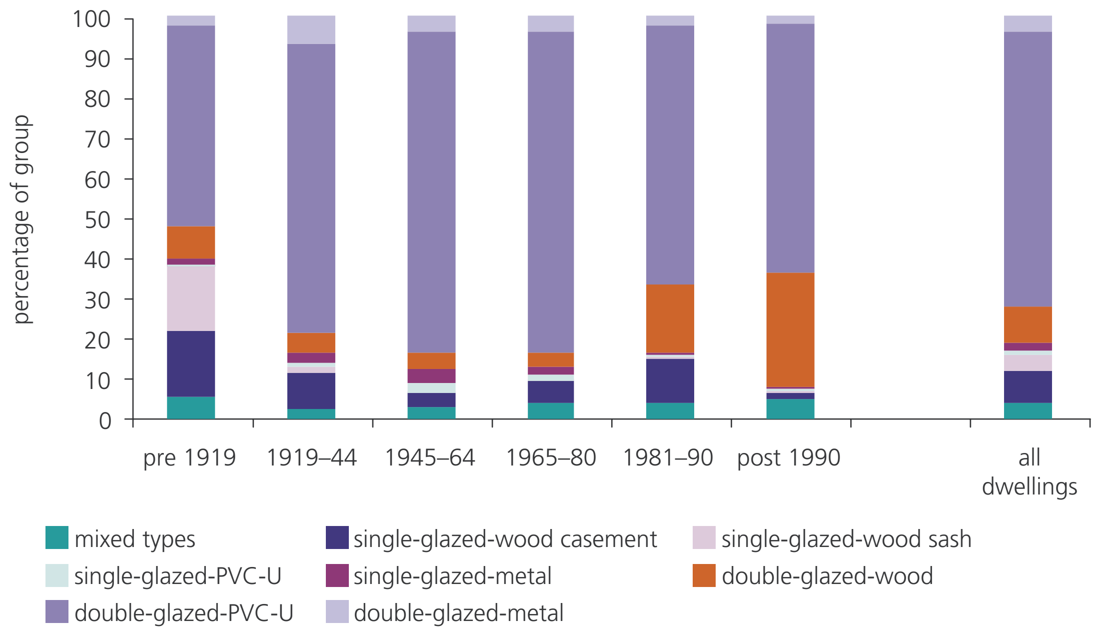
Figure 1.22: Predominant type of roof covering by type of area, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 1.14
Source: English Housing Survey 2008, dwelling sample

1.32 The most common type of windows were PVC-U double glazed units with 69% of dwellings having these as the main or only type of window. Only 8% of dwellings had single glazed wood casement windows as the main type, although 22% had at least some windows of this type. Dwellings built before 1919 were the most likely to have single glazed timber windows – 17% of casement type and 16% of sash type, Figure 1.23. Only half (50%) of dwellings of this age had PVC-U double glazed windows. Newer dwellings were more likely to have wood double glazed windows than older ones. Over a quarter (28%) of dwellings built after 1990 had this type of window compared with 9% for the stock as a whole.

Figure 1.23: Predominant type of windows by dwelling age, 2008

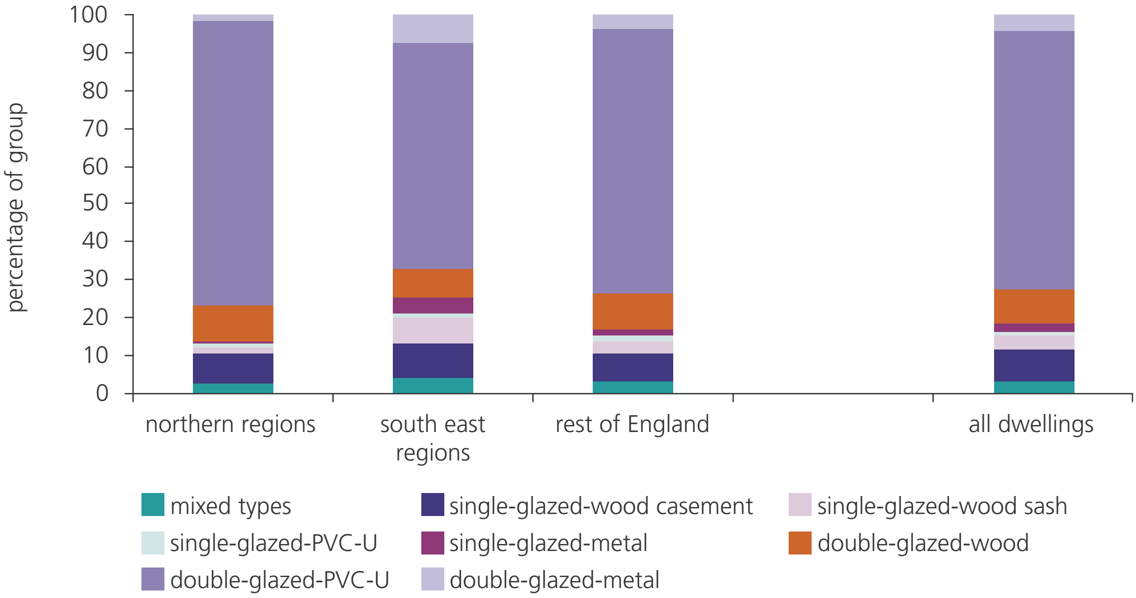


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.15
Source: English Housing Survey 2008, dwelling sample

1.33 There were also regional variations. The south east regions had a much higher proportion of dwellings with single glazed windows of all types and with metal double glazed windows combined with a lower proportion of PVC-U double glazed, Figure 1.24.

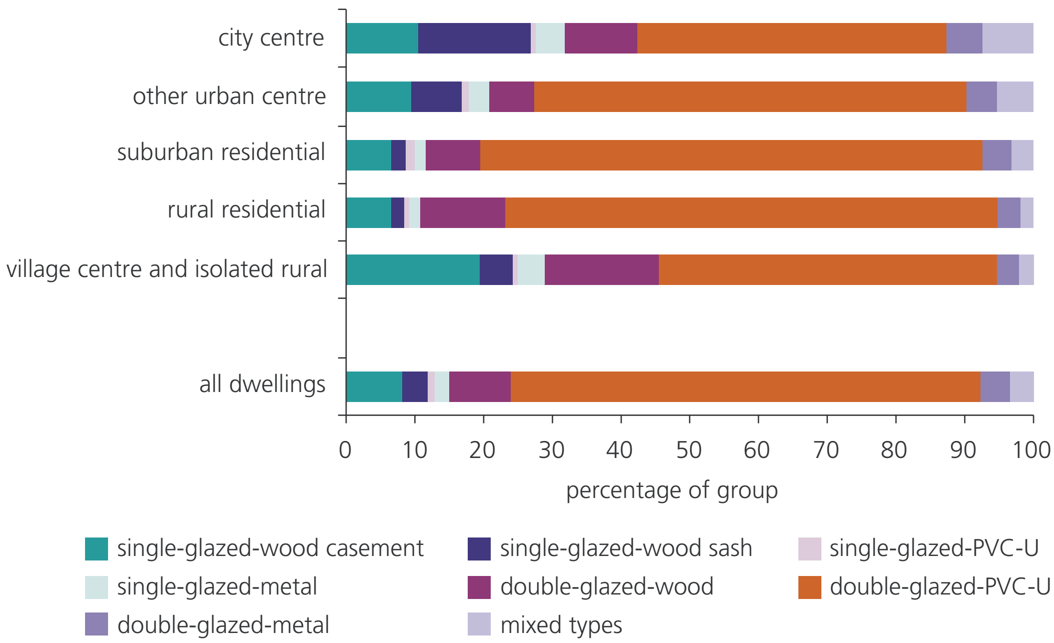
1.34 Dwellings in both city centres and village centres/isolated rural areas were also more likely to have single glazed windows although the type varied. The most common type of single glazed windows in city centres were timber casement windows whereas in village centres and isolated rural areas, sliding sash windows were more common, Figure 1.25. Almost three quarters of dwellings in suburban areas (73%) and rural residential areas (72%) had PVC-U double glazing. Wood double glazing was more common in village centres and isolated rural areas.

Figure 1.24: Predominant type of windows by region, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 1.16
Source: English Housing Survey 2008, dwelling sample

Figure 1.25: Predominant type of windows by type of area, 2008

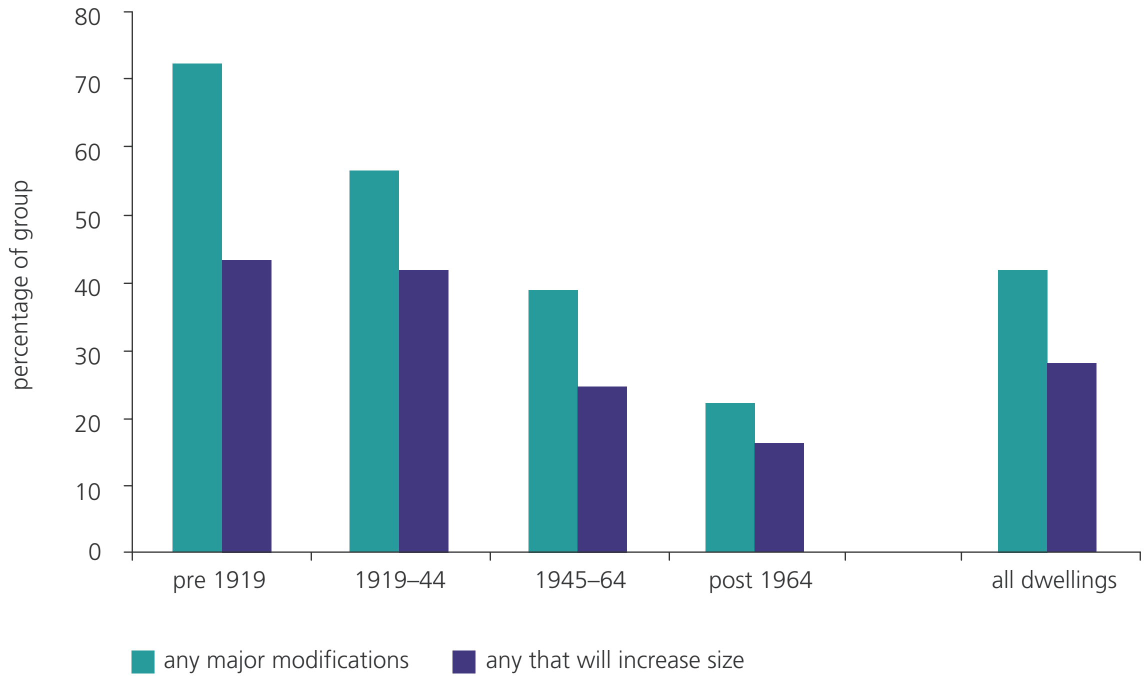


Base: all dwellings
Note: underpinning data are presented in Annex Table 1.17
Source: English Housing Survey 2008, dwelling sample

Major alterations to dwellings since they were built

1.35 Four in ten (41%) dwellings had had at least one major alteration carried out since they were originally built and this rose to almost three quarters (72%) of dwellings built before 1919, Figure 1.26. In over a quarter (28%) of dwellings, this had involved work that would increase the size of the dwellings (extensions or loft conversions).

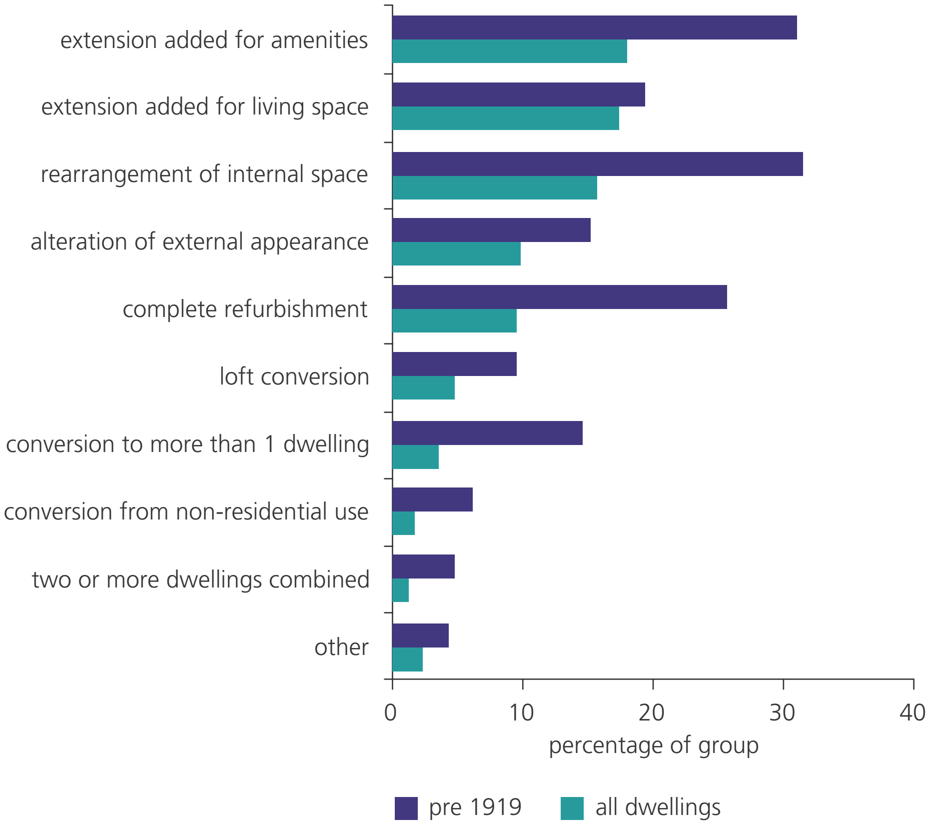
Figure 1.26: Major alterations since original construction by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 1.18
Source: English Housing Survey 2008, dwelling sample

1.36 The most commonly carried out alterations were extensions to increase living space and rearrangement of internal space. The incidence of most types of alteration was significantly higher for pre 1919 dwellings, Figure 1.27.

Figure 1.27: Types of major alterations carried out since original construction, 2008



Base: all dwellings
Notes:
1) 'other' includes, over-cladding, structure replaced, over-roofing, conversion to HMO use
2) underpinning data are presented in Annex Table 1.19
Source: English Housing Survey 2008, dwelling sample

Chapter 2
Amenities and services

This chapter examines the services and amenities present in dwellings, covering kitchens, bathrooms, WCs, the accessibility of housing for people with mobility problems, security and smoke alarms.

Key findings

- **Just over half of kitchens (55%) and just under half (48%) of bathrooms were less than 10 years old. Local authority housing had the oldest kitchens and bathrooms.**
- **Around 770,000 or 3% of dwellings had kitchens that were too small to accommodate all of the necessary amenities. The vast majority (89%) of these dwellings did not have an additional utility room that could have housed some of them.**
- **Overall 40% of dwellings had a second WC and 21% had a second bath or shower. These secondary amenities were more common in the owner occupied stock, the largest dwellings and those located in the least deprived areas.**
- **Only a small proportion of dwellings (3%) had bathrooms that were badly located, for example, accessed through a bedroom or located externally and some 3% of bathrooms had defects related to their size or layout.**
- **There has been a significant rise in the proportion of dwellings with the more water efficient cisterns (6 litre capacity or less) from 13% in 2001 to 44% in 2008. This improvement for reducing water consumption is evident in all tenures. Dwellings built between 1945 and 1960 were the most likely to have to older cisterns of at least 9 litres in volume.**
- **Only around 4% of dwellings were fully 'visitable' for people with mobility problems because the property benefited from level access, a flush threshold, a WC at ground/entry level and had sufficient door and circulation space. One in eight (12%) of dwellings owned by housing associations had all four of these features.**
- **Around one fifth of flats had one or more lifts in their block, including virtually all (98%) high rise flats in blocks of 6 storeys or more. Social sector flats in blocks of less than 6 storeys were more likely to have lifts than those in the private sector.**

- **Over a quarter (29%) of dwellings lacked secure windows and doors. This proportion was even higher, around 50%, for dwellings built before 1919, converted flats and the private rented stock.**
- **Nine out of ten (91%) of households had a working smoke alarm, up from 74% in 2001. However the proportion was a little lower for some groups, particularly those living in converted flats (86%).**

Mains services

Electricity

2.1 Virtually all dwellings in England had a mains electricity supply. The survey estimates that there were around 200,000 dwellings with a private supply e.g. produced from a generator. About one in six (16% of) dwellings had an off-peak electricity supply (that is, a supply offered at lower price than on peak supply) which can be utilised by storage heaters to reduce the cost of heating. The likelihood of dwellings having an off-peak electricity supply was related to their location, build type and age. Dwellings in cities and urban centres and those located in villages or more isolated rural areas were the most likely to have an off peak supply. Some 27% of dwellings in isolated rural areas, 25% in village centres and 24% in urban or city centres had such a supply. Similarly dwellings in the rest of England were twice as likely to have off-peak electricity than those in northern regions (22% compared with 10%). Purpose built flats were much more likely to have off peak electricity with some 35% of high rise and 30% of low rise possessing this compared with around 12% of terraced or semi-detached houses. Some 26% of dwellings built between 1981 and 1990 had an off peak supply; considerably higher than those built at other times.

Mains gas

2.2 Around 87% of dwellings had a mains gas supply, although the presence of this service varied considerably by location and type of dwelling. Dwellings most likely to have mains gas were terraced or semi-detached houses (92%), those located in northern regions (92%) or in suburban areas (93%). Those least likely to have mains gas were dwellings in more isolated rural areas (25%) or village centres (64%) together with high rise purpose built flats (52%) and low rise purpose built flats (70%).

Mains drainage

2.3 The vast majority (97%) of dwellings were connected to the mains drainage system. Looking at the 550,000 dwellings that had some other arrangement, most of these consisted of septic tanks. Virtually all dwellings with non-mains drainage were privately owned (98%) and over half were built before 1919.

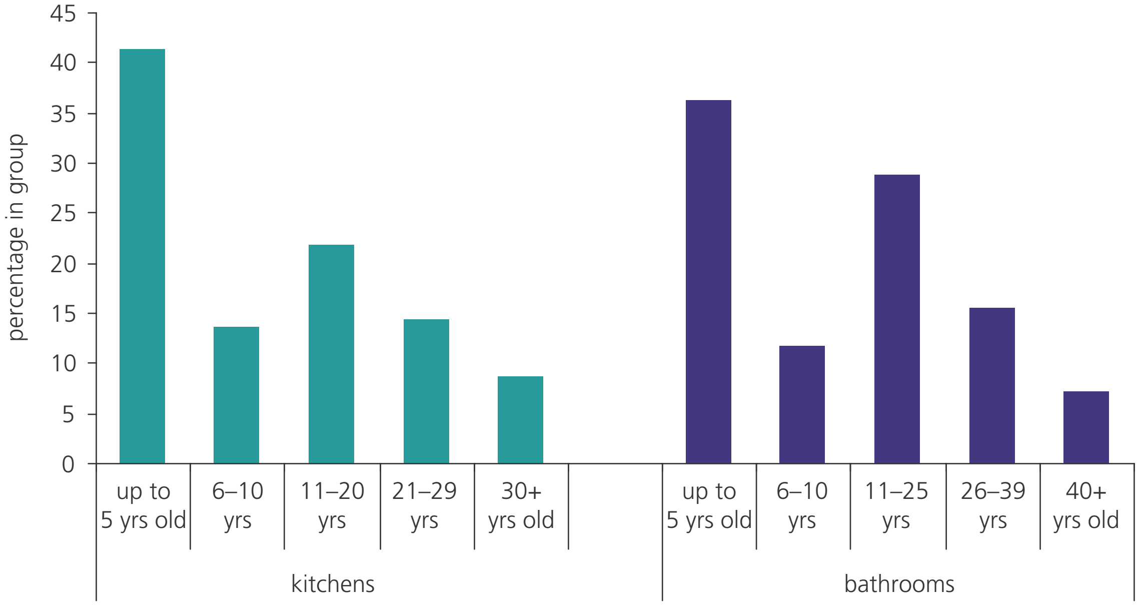
Kitchens and bathrooms

2.4 This section first examines kitchen and bathroom amenities in terms of their age (and, the size of kitchens) and then goes on to assess their safety and hygiene in terms of space, layout and cleanability and, for bathroom amenities, their location. These defects are relevant in determining whether Housing Health and Safety Rating System (HHSRS) risks for food safety and for both domestic and personal hygiene are significantly worse than average.

Age of kitchens and bathrooms

2.5 Roughly two fifths of kitchens were 5 years old or under and almost one in ten were 30 years old or over, Figure 2.1. For bathrooms, around half (48%) of dwellings had bathrooms that were less than 10 years old and 7% had bathrooms that were at least 40 years old.[7]

Figure 2.1: Percentage distribution of kitchens and bathrooms by age, 2008



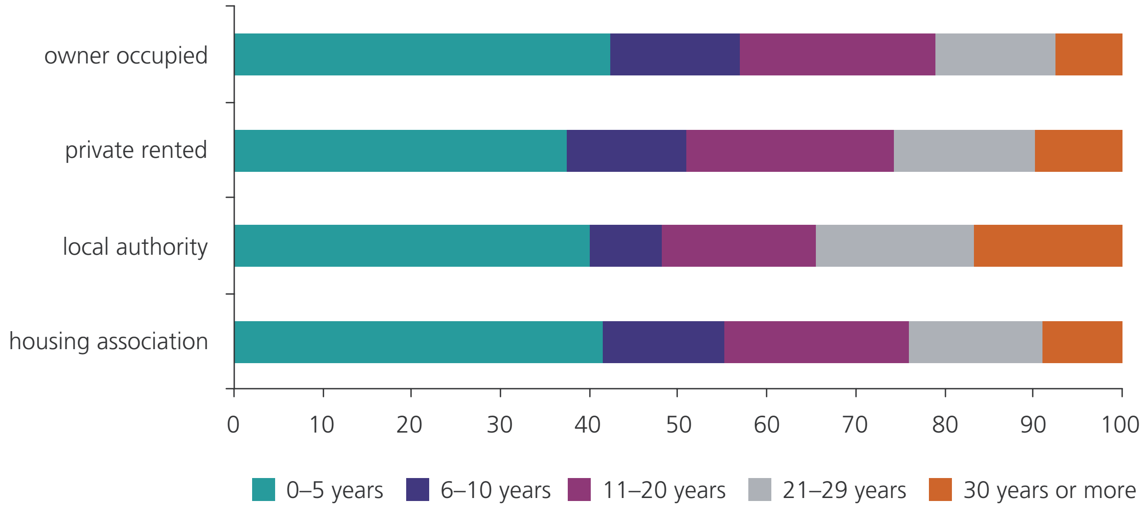
Base: all dwellings
Notes:
1) for kitchens and bathrooms the bars in the diagram separately sum to 100% (all dwellings)
2) underpinning data are presented in Annex Tables 2.1 and 2.2
Source: English Housing Survey 2008, dwelling sample

2.6 The age of kitchens and bathrooms varied considerably by tenure. Local authority dwellings were the most likely to have kitchens that were 30 years old or more (17% or 330,000) compared with all other sectors (8–10%), Figure 2.2. The private rented sector had a slightly lower proportion of dwellings with

[7] Following consultation with social landlords, the decent homes standard considered a reasonable life expectancy for kitchens and bathrooms to be 30 years and 40 years respectively, after which they would most likely need replacing on grounds of repair (while acknowledging that tenants may prefer those amenities to be replaced more frequently). See *A Decent Home: Definition and Guidance for implementation* (2006).

kitchens that were 5 years old or less than the other tenures (37% compared with 40–42%)

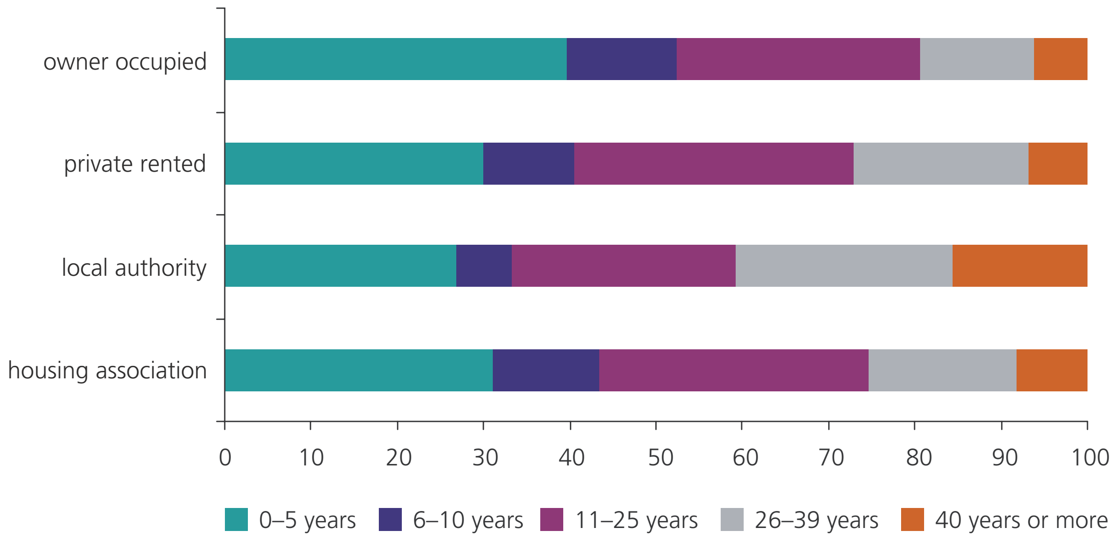
Figure 2.2: Percentage of kitchens in different age groups by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 2.1
Source: English Housing Survey 2008, dwelling sample

2.7 Similarly local authority dwellings compared less well to other tenures having a significantly higher proportion of older bathrooms, Figure 2.3. Around 800,000 (41% of) local authority dwellings had bathrooms over 25 years old; 310,000 (16%) of which were at least 40 years old.

Figure 2.3: Percentage of bathrooms in different age groups by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 2.2
Source: English Housing Survey 2008, dwelling sample

2.8 This tenure variation is not accounted for by the different age profile of the tenures. For example, 23% of local authority dwellings built between 1965 and 1980 had a kitchen that was more than 30 years old compared with 17% of housing association, 14% of private rented, and 10% of owner occupied housing stock dating from this period. Similarly 26% of local authority stock built between 1945 and 1964 had a bathroom 40 or more years old, compared to 19% private rented, 18% housing association and 14% owner occupied properties (see Annex Tables 2.3 and 2.4).

2.9 Bungalows and high rise purpose built flats were less likely to have kitchens under 5 years old than other types (see Annex Table 2.5). Bungalows were more likely to have older kitchens because their occupants were more likely to be older; high rise flats were more likely to do so because a high proportion of them were owned by local authorities.

Size of kitchen

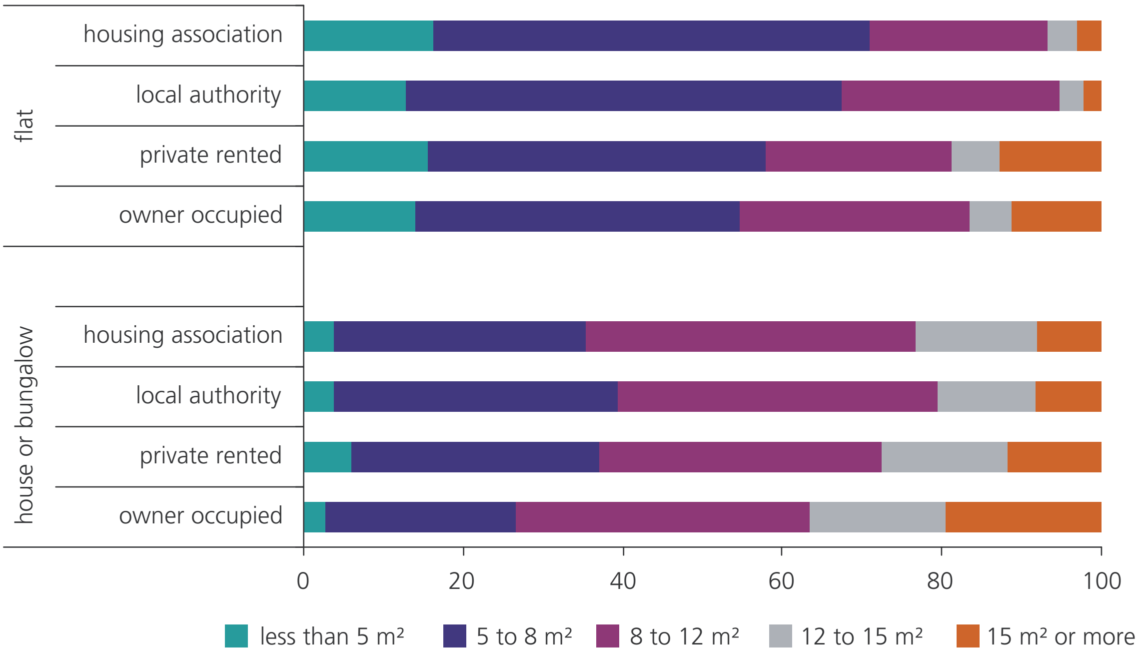
2.10 The average kitchen was around $10m^2$ in area although some 5% were smaller than $5m^2$ and 16% were larger than $15m^2$. Looking at the dwellings with the smallest kitchens (those $5m^2$ or less), less than 3% of these had a utility room that could have accommodated some of the essential amenities.[8]

2.11 Owner occupied dwellings were less likely to have very small kitchens of $5m^2$ or less (4%) compared to other tenures which had 8–9% of these. Similarly, owner occupied dwellings were significantly more likely to have larger kitchens. Around 35% of owner occupied dwellings had kitchens of at least $12m^2$ in area compared to 24% of privately rented, 17% of housing association and 13% of local authority stock (see Annex Table 2.7).

2.12 Although flats were more likely to have smaller kitchens, and the social sector had a higher proportion of flats among its stock, the type of dwelling did not account for all of the variation in kitchen size between the tenures. Around 37% of owner occupied houses and bungalows had a kitchen of $12m^2$ or more compared with 28% that were private rented, 23% rented from housing associations and 21% from local authorities. Around 19% of private rented flats had a kitchen of $12m^2$ or more compared with 7% of housing association flats and 5% of local authority flats, Figure 2.4.

[8] A utility room typically contains appliances such as a washing machine, tumble dryer which, in dwellings without such a room, would be located in the kitchen or laundry. The room would normally contain a sink but is not used for cooking or food preparation.

Figure 2.4: Percentage of kitchens in given size groups by tenure and dwelling type, 2008



Base: all dwellings
Note: underpinning data is presented in Annex Table 2.8
Source: English Housing Survey 2008, dwelling sample

2.13 Not surprisingly, kitchen size varied considerably with the type and size of dwelling. One in six (15%) of converted and purpose built low rise flats had very small kitchens (less than 5m²) compared with just 1% of detached houses (see Annex Table 2.9). Over a quarter (29%) of detached houses had very large kitchens (15m² or more) compared with 6% of purpose built flats and 7% of small terraced houses. Interestingly around 16% of converted flats also had these very large kitchens; most of these were simply very large flats rather than small studio or one-bedroom flats with open-plan living arrangements. Again, this underlines the diversity of this group of dwellings.

Kitchen and bathroom defects

2.14 The survey makes an assessment of how far kitchens and bathrooms have defects in terms of their space, layout, cleanability and, additionally for bathroom amenities, their location. The presence of these defects informs the survey's assessment of HHSRS risks related to food safety and domestic and personal hygiene, and also the need for modernisation under the decent dwellings standard. The survey criteria for these assessments are set out in Box 2.1.

Box 2.1: Kitchen and bathroom defects

Space: the kitchen or bathroom is so small that it is impossible to fit all the necessary amenities into the room. Additionally, for kitchens, if opposite doors (e.g. oven and cupboard) touch when open, or if the kitchen width is less than 1.8m.

Layout: the kitchen or bathroom layout is dangerous (rather than inconvenient).

Cleanability: the wall, ceiling, floor or amenity surfaces are uncleanable (eg a badly cracked sink, bath or WC).

For bathrooms only:

Location: the only bath/shower or WC is externally located or located in, or accessed through, a bedroom. The main WC does not have a wash hand basin situated on the same floor. A WC opening directly onto a kitchen (rather than via a ventilated lobby) does not have a wash hand basin (which is particularly important if it opens next to a food preparation area).

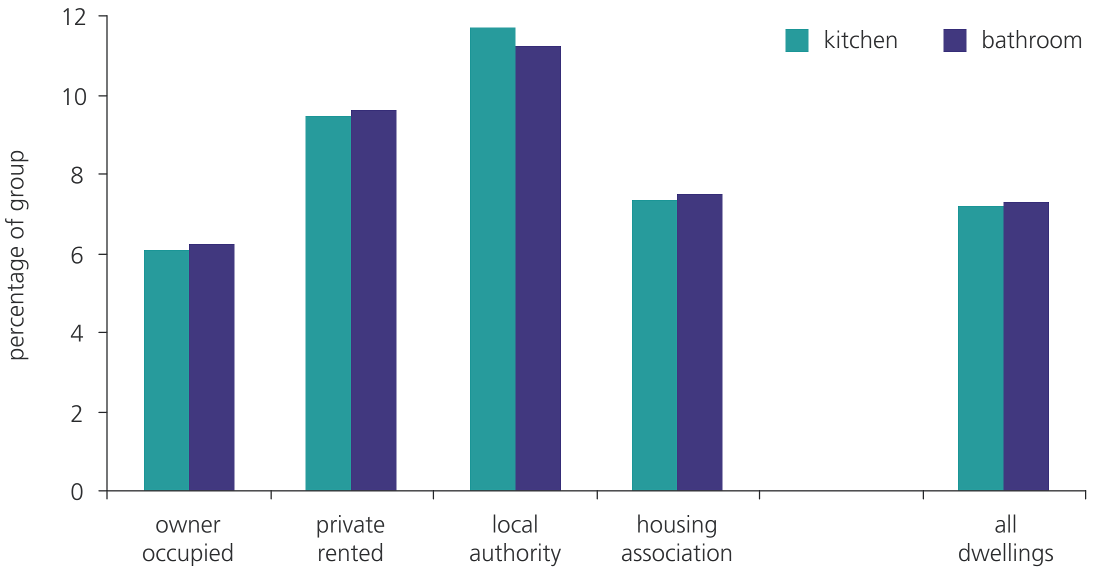
2.15 In total, around 1.6 million dwellings (7% of the housing stock) had kitchens with defects in one or more aspects of the criteria set out in Box 2.1. Over half of these (770,000) were defects in kitchen space (and the vast majority – 89% – of these dwellings did not have a separate utility room that could have been used to accommodate some amenities and/or activities). Just over one million were defects in kitchen layout and around 870,000 were defects related to their cleanability, see Annex Table 2.10.

2.16 A similar number of dwellings (1.6 million) had bathrooms with defects on at least one of the four criteria set out in Box 2.1. Around 760,000 of these dwellings had defects in terms of bathroom space and just over 600,000 had defects in their layout. Some 950,000 had bathrooms with defects in their cleanability and in 560,000 dwellings the problem related to bathroom location.

2.17 Only one quarter (670,000) of the 2.5 million dwellings with defects in their kitchen or bathroom had defects in both, see Annex Table 2.11. Nevertheless, the distributions of kitchen defects and bathroom defects across the housing stock were very similar. Around one in eight local authority dwellings had kitchens or bathrooms with defects, higher than the other rented sectors and nearly twice the proportion found with owner occupied housing, Figure 2.5.

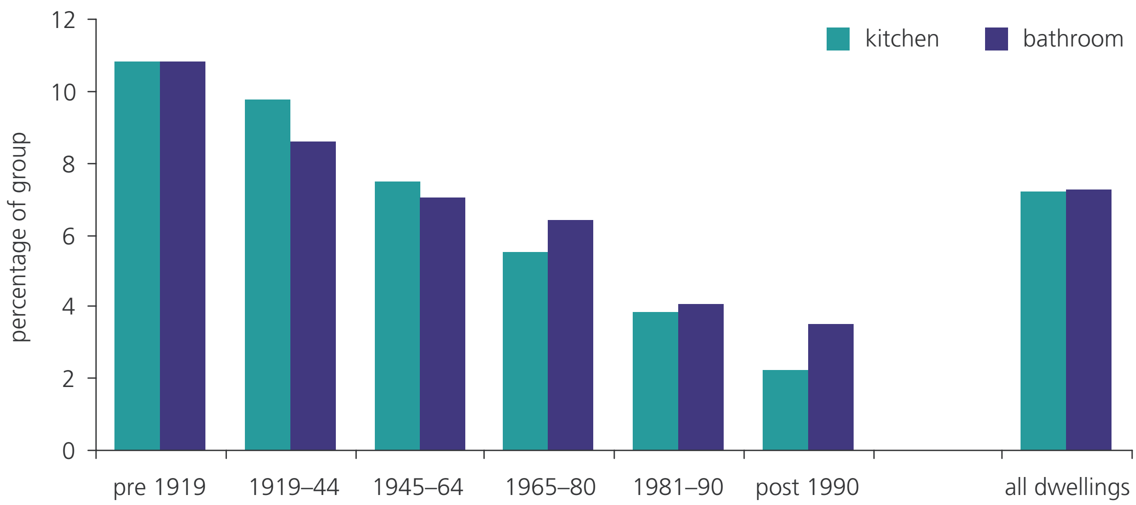
2.18 The newest housing built after 1990 performed much better than older dwellings, particularly in relation to kitchen defects – pre 1919 dwellings were five times more likely to have one or more kitchen defects than those built after 1990, Figure 2.6.

Figure 2.5: Percentage of dwellings with one or more kitchen/bathroom defects by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 2.12
Source: English Housing Survey 2008, dwelling sample

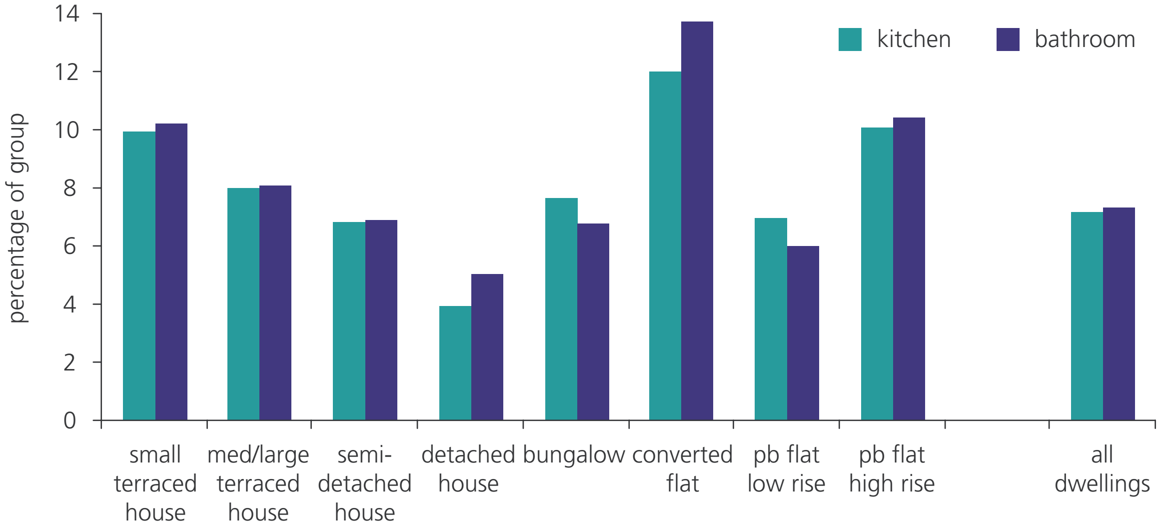
Figure 2.6: Percentage of dwellings with one or more kitchen/bathroom defects by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 2.13
Source: English Housing Survey 2008, dwelling sample

2.19 Converted flats performed least well with one in seven having one or more bathroom defects and almost as many having kitchen defects, Figure 2.7. Small terraced houses and purpose built high rise flats were also more likely to have kitchens or bathrooms with defects. Detached houses performed significantly better than other dwelling types.

Figure 2.7: Percentage of dwellings with one or more kitchen/bathroom defects by dwelling type, 2008



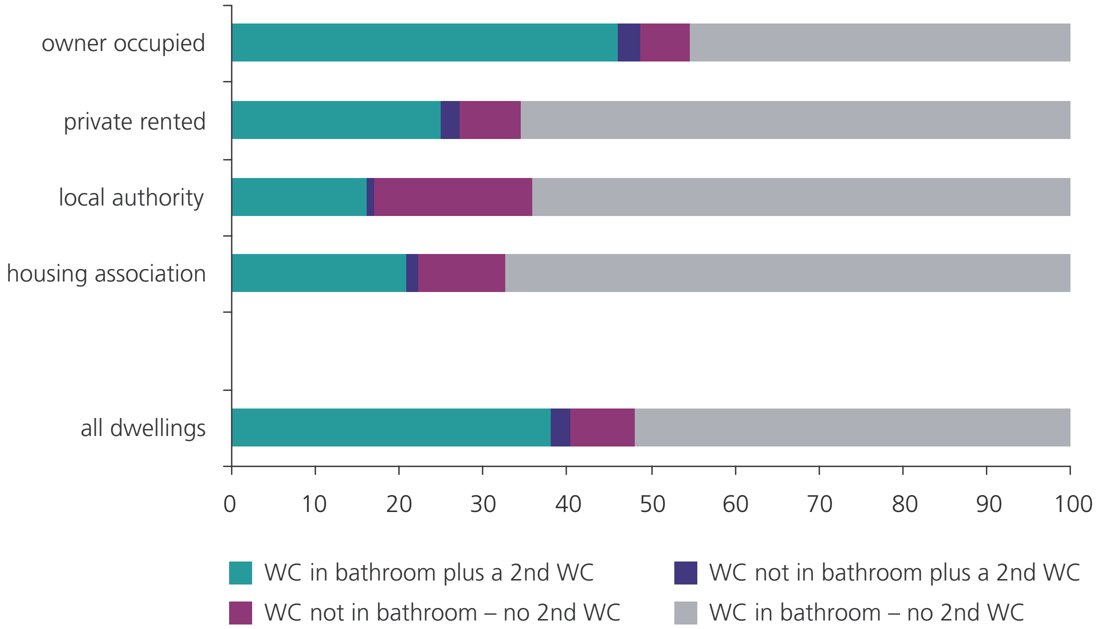
Base: all dwellings
Note: underpinning data are presented in Annex Table 2.14. 'Pb flat' refers to purpose built flat
Source: English Housing Survey 2008, dwelling sample

WCs

2.20 The type and arrangement of WC facilities in dwellings is important to ensure adequate personal hygiene. The presence of a WC separate from the bathroom can help to promote this; particularly for larger households. In the majority of dwellings (90%) the main WC was located in the bathroom, Figure 2.8. In about half of all these cases, this was the only WC in the dwelling. Owner occupied dwellings where the main WC was in the bathroom were much more likely to have an additional WC than dwellings in other tenures. Within the social sector, housing association dwellings were more likely to have an additional WC than those rented from local authorities – largely because housing association dwellings tend to be newer.

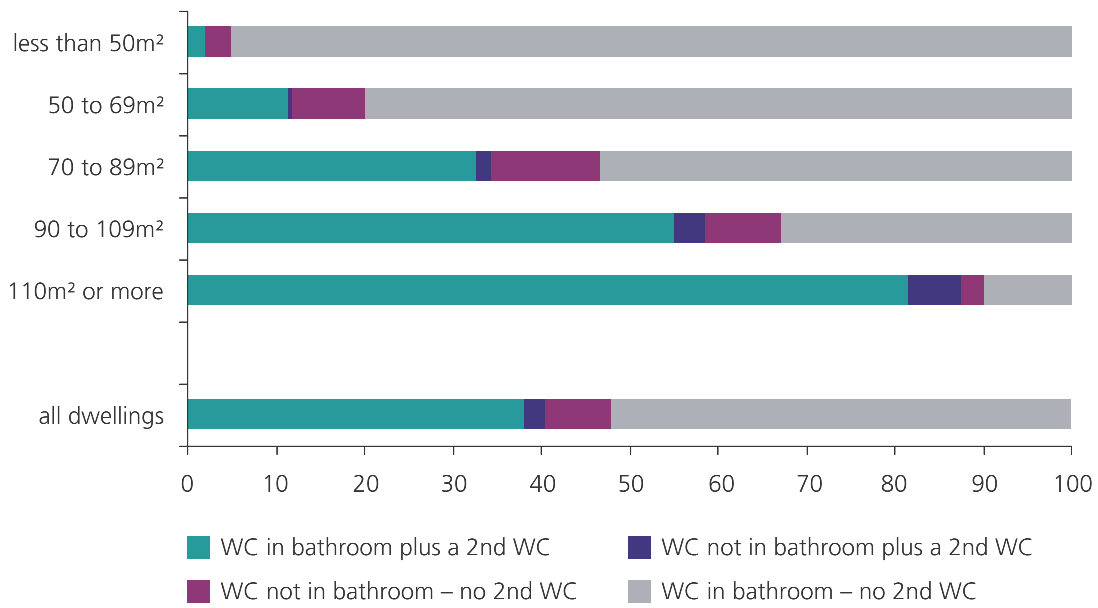
2.21 There was a marked contrast between the largest and smallest sized dwellings in terms of their having additional WC amenities. Around four fifths (81%) of dwellings with a floor area greater than110m² had a WC in the main bathroom and an additional WC compared to just 2% of dwellings with a floor area less than 50m² , Figure 2.9.

Figure 2.8: Percentage of dwellings with different type of WC amenities by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 2.15
Source: English Housing Survey 2008, dwelling sample

Figure 2.9: Percentage of dwellings with different type of WC amenities by dwelling size, 2008



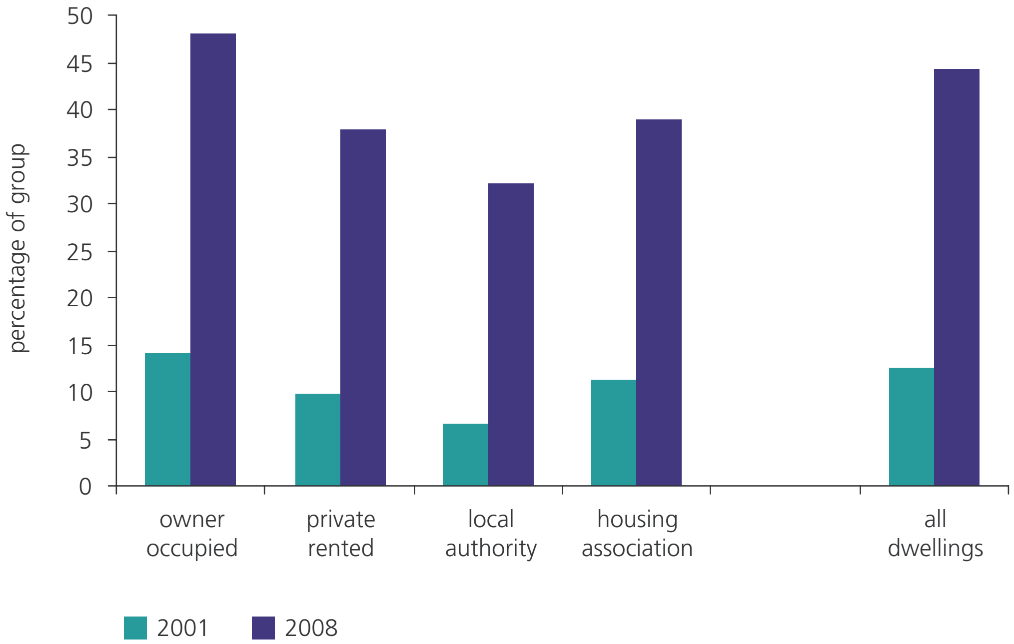
Base: all dwellings
Note: underpinning data are presented in Annex Table 2.16
Source: English Housing Survey 2008, dwelling sample

2.22 The survey also assesses the age of the main WC which can act as a proxy for the size of the WC cistern.[9] Given that approximately 30% of the water used in England is for flushing WCs, the size of WC cisterns is an important determinant of water consumption. As an approximation for water consumption, cisterns have been placed into four bands based on the age of the main WC: 13 litre (pre 1960), 9 litre (1960 to 1987), 7.5 litre (1988 to 1998) and 6 litre (1999).

2.23 Nearly half (48%) of owner occupied dwellings had the more modern smaller sized (6 litre maximum) cisterns compared with about one third (32%) of the local authority stock. Over half (54%) of local authority dwellings had cisterns with a volume of 9 litres or more.

2.24 There has been a significant reduction in the proportion of dwellings with the largest volume cisterns since 2001 and this improvement is evident in all tenures.[10] The proportion of dwellings with the smallest sized (6 litre maximum) cisterns rose from 13% in 2001 to 44% in 2008, Figure 2.10.

Figure 2.10: Percentage of dwellings with WC cisterns of 6 litres or less by tenure, 2001 and 2008



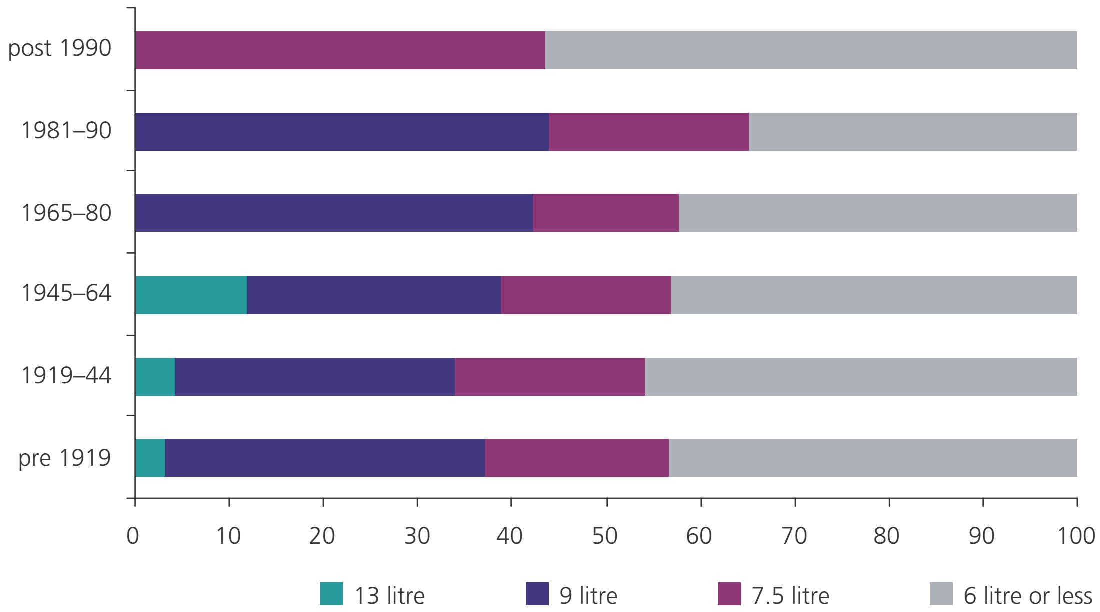
Base: all dwellings
Note: underpinning data are presented in Annex Table 2.17
Source: English Housing Survey 2008, dwelling sample

9 WC cisterns installed before about 1960 were high volume averaging around 13 litres. This size was reduced over time during the 1960s and 1980s to 9 litres. By 1993, the maximum size of cistern that could be installed was 7.5 litres and this was further reduced to 6 litres in the 1999 Water Fitting Regulations.

10 Because of stock transfers within the social sector, some dwellings that were owned by local authorities in 2001 may be owned by housing associations in 2008.

2.25 As many of the oldest dwellings will have had the original WC replaced, in some cases more than once, these dwellings did not have the largest cisterns, Figure 2.11. It was in fact dwellings built between 1945 and 1964 that were most likely to have the largest 13 litre cisterns and those built between 1965 and 1990 that were the most likely to have a cistern of 9 litres or more.

Figure 2.11: Percentage of dwellings with given WC cistern size by dwelling age, 2008

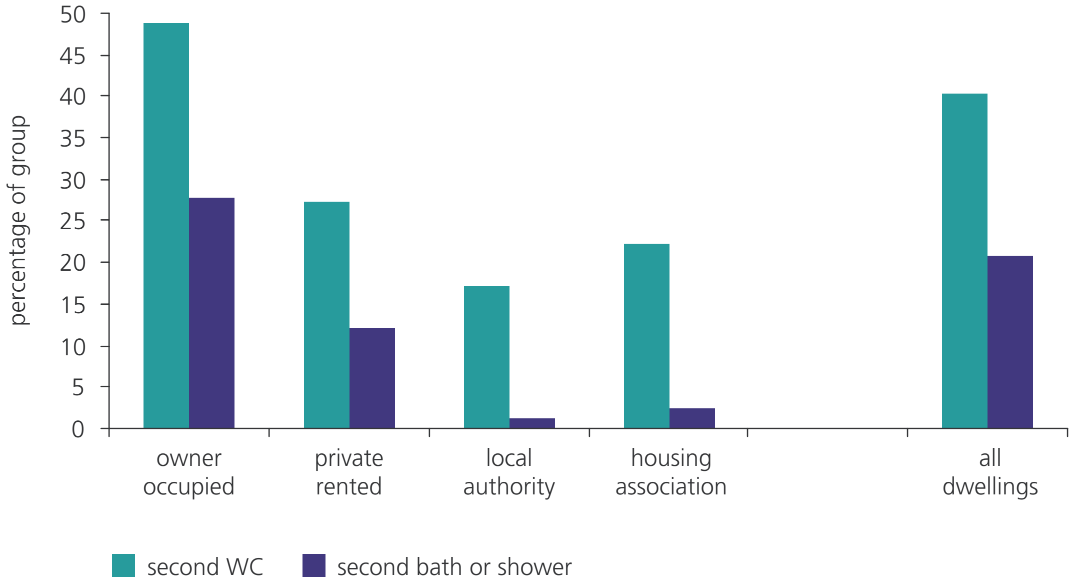


Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 2.1
Source: English Housing Survey 2008, dwelling sample

Second WC or bath/shower

2.26 Some 40% of dwellings had a second WC and 21% had a second bath or shower. About a third (31%) of all second WCs and two thirds (68%) of the second baths or showers were en-suite (see Annex Table 2.18). The presence of these secondary amenities varied markedly by tenure, Figure 2.12. About half (49%) of owner occupied housing had a second WC compared with just 17% in the local authority sector. Only a very small proportion of dwellings in the social sector (less than 2%) had a second bath/shower compared with over a quarter (28%) of owner occupied dwellings.

Figure 2.12: Percentage of dwellings with given secondary amenities by tenure, 2008



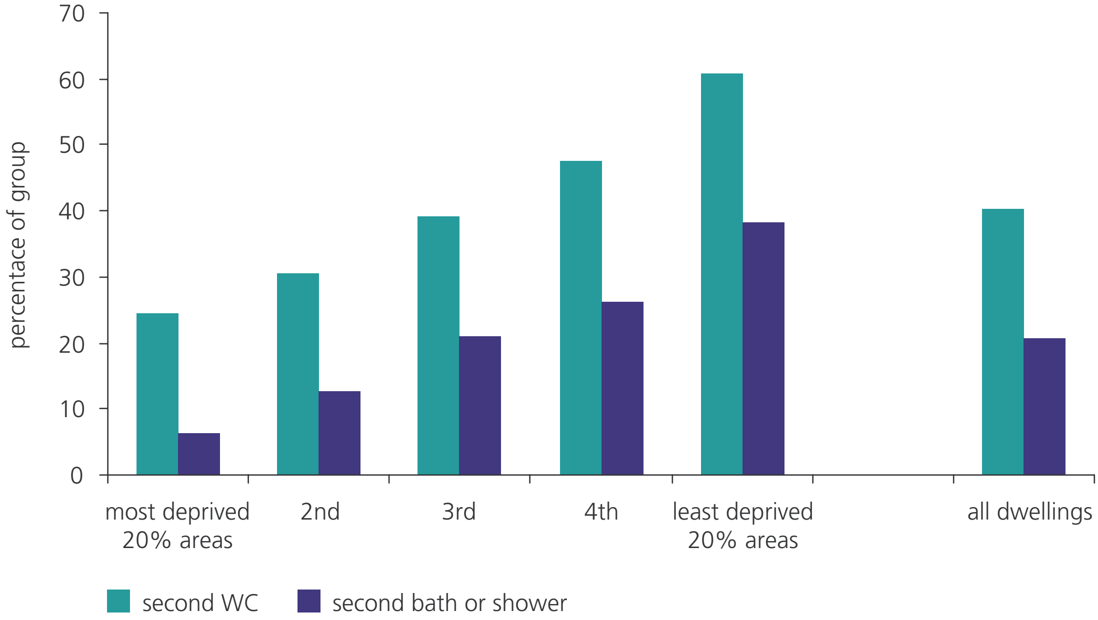
Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 2.1
Source: English Housing Survey 2008, dwelling sample

2.27 The newest dwellings (built after 1990) were the most likely to have a second WC (63%) or second bath/shower (46%). In contrast those dwellings built between 1945 and 1964 were least likely to have these amenities; only 31% of these dwellings had a second WC and 11% had a second bath/shower (see Summary Statistics Table SST 2.1).

2.28 The presence of secondary amenities was, not surprisingly, related to dwelling size. Only 2% of the smallest dwellings (floor area less than $50m^2$) had a second WC compared with around 88% of the largest dwellings (floor area of at least $110m^2$). Similarly, 63% of the largest dwellings had a second bath/shower compared to just 1% of the smallest sized dwellings (see Summary Statistics Table SST 2.1).

2.29 As might be expected, there was a strong relationship between deprivation and the presence of secondary amenities, Figure 2.13. Only 6% of dwellings in the most deprived 20% of areas had a second bath/shower and around a quarter (25%) of these dwellings had a second WC. In contrast, around 38% of dwellings in the least deprived 20% of areas had a second bath/shower and 61% had a second WC.

Figure 2.13: Percentage of dwellings with given secondary amenities by area deprivation, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 2.2
Source: English Housing Survey 2008, dwelling sample

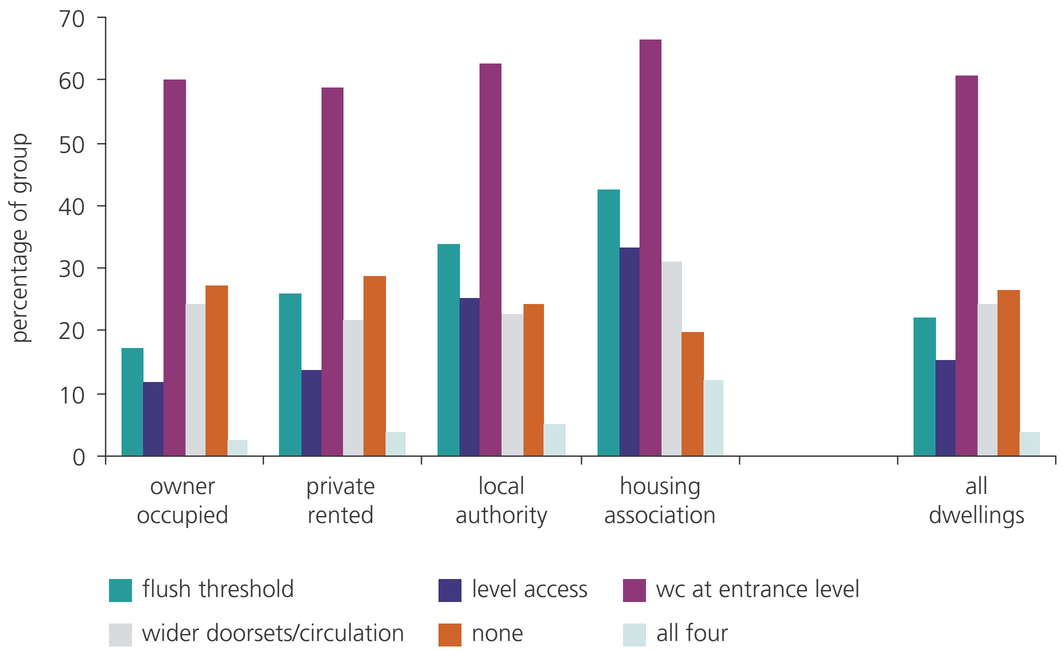
Accessibility

2.30 For a more detailed analysis of this topic see the EHCS 2007 report. Although it is based on earlier data, it is unlikely that the key findings have changed significantly over a period of one year.

2.31 In 2008, some 4.5 million households contained at least one person with a mobility problem. The EHS physical survey assesses the presence of a number of features that enable dwellings to be more accessible and adaptable. Four of these features are considered to be the most important for enabling people with mobility problems to visit a home (level access, flush threshold, sufficient door and circulation space to move around and use of a WC on the ground or entry floor).

2.32 Only around 836,000 dwellings (4%) possessed all four of these features and could therefore be considered fully 'visitable'. Not all people with mobility problems will, however, require all these four features. Around 9% of dwellings had three features, 21% had two and 40% had one. Almost 6 million dwellings (27%) had none of these features. The housing association stock was far more likely to have all four features than those in other tenures; especially owner occupied. One in eight (12%) housing association dwellings had all four features compared with 3% of owner occupied dwellings, Figure 2.14.

Figure 2.14: Percentage of dwellings with 'visitability' features by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Tables 2.19 to 2.23
Source: English Housing Survey 2008, dwelling sample

Lifts

2.33 There were just over 4 million flats and about one in five (19%) of these had one or more lifts in the block. Generally speaking, the higher the block, the more likely there was to be a lift. Virtually all flats in blocks of 6 or more floors had a lift compared with 16% in blocks of 3–5 storeys and 5% in two storey blocks. Social sector flats were more likely to have lifts than those that were privately owned or rented (25% compared with 14%). This is not simply because social sector flats were more likely to be high rise. In fact flats in social sector blocks with 5 storeys or less were more likely to have lifts than those in the private sector (see Annex Table 2.24).

Security

2.34 Security is an issue of prime importance to residents normally topping the list of key concerns in local surveys of residents.

Windows and doors

2.35 This survey assesses the security afforded by the main entrance door to the dwelling, other external doors and any accessible windows in terms of how easy it would be to physically break into the dwelling. Around 71% of dwellings had secure windows and doors, although this proportion varied considerably for different groups of stock. Dwellings that were least likely to have secure windows and doors were those in village centres and other rural areas (55%), converted flats (49%), dwellings built before 1919 (53%) and private rented accommodation (61%). The dwellings that were most likely to have secure windows and doors were dwellings built after 1990 (88%), purpose built high rise flats (77%), dwellings located in suburban residential areas (74%), owner occupied (74%) and housing association (73%) dwellings (see Summary Statistics Tables SST 2.10 and 2.11).

2.36 Some 60% of all dwellings had external lighting (this includes those where external communal lighting was provided as a shared facility). Around 64% of housing association dwellings had this feature compared with about half of private rented accommodation (49%). The proportion of dwellings with external lighting varied by dwelling age from 41% of dwellings built before 1919 to 86% of those built after 1990. Less than half of terraced houses and converted flats had external lighting compared with 80% or more of detached houses and purpose built high rise flats, (see Summary Statistics Table SST 2.10).

Burglar alarms and door viewers

2.37 Some 29% of dwellings had a burglar alarm, up from 25% in 2001[11]. Burglar alarms were more common in the owner occupied sector (36%), dwellings built after 1980 (38%) and detached houses (54%) (see Summary Statistics SST Table 2.10).

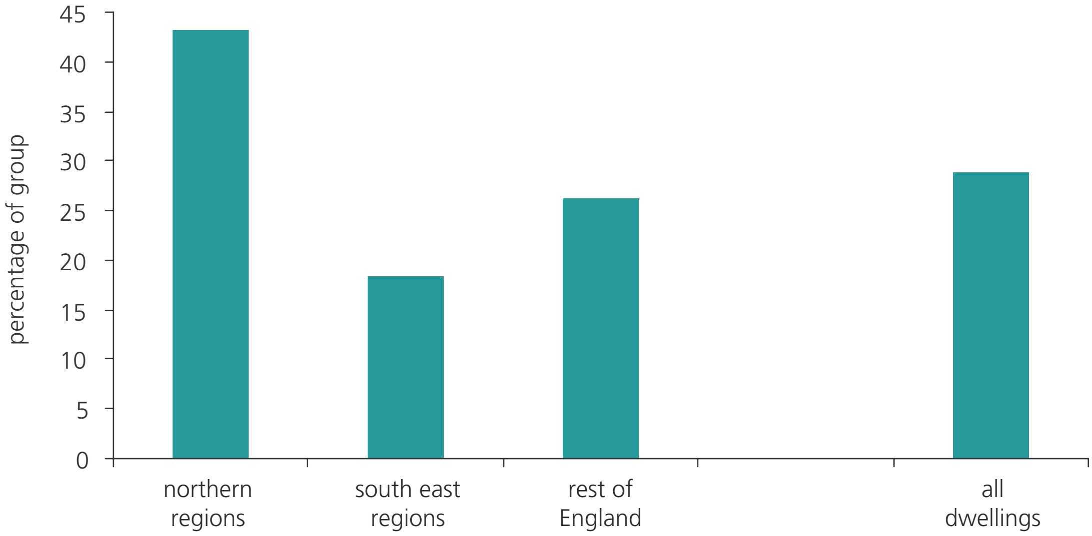
2.38 Those parts of the housing stock with the lowest proportion of burglar alarms were local authority dwellings (9%), housing association dwellings (11%) purpose built low rise flats (6%) and dwellings in city centres (12%). The proportion of dwellings with burglar alarms also varied by deprivation from over one third (36%) of dwellings in the least 10% of deprived areas having an alarm to 24% in the most deprived 10% of areas.

2.39 Interestingly, dwellings in the northern regions were much more likely to have burglar alarms than those located elsewhere (43% compared with 26% in rest of England and 18% in south east regions), Figure 2.15.[12]

[11] See web table SC2a: Dwelling security features by tenure in the Secure Dwellings section http://www.communities.gov.uk/housing/housingresearch/housingsurveys/englishhousecondition/ehcsdatasupporting/ehcsstandardtables/

[12] One factor influencing the take up of burglar alarms in the northern regions group may be higher than average rates of burglary reported for at least some of its individual regions (eg Home Office Statistical Bulletin 4/99 *Burglary of Domestic Dwellings* and Home Office Statistical Bulletin 14/04 Supplementary Report *Distraction burglary: recorded crime data*).

Figure 2.15: Proportion of dwellings with burglar alarms by region, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST 2.11
Source: English Housing Survey 2008, dwelling sample

2.40 Around half (51%) had of all dwellings had a door viewer and these were more common in the social sector. Some 68% of the housing association stock and 63% of local authority dwellings had door viewers. They were particularly common in high rise flats; 87% of these dwellings had a door viewer. Newer dwellings built after 1980 were much more likely to have door viewers than those built before 1919 (60% compared with 43%). The presence of door viewers did not vary noticeably by region, type of area or deprivation.

Additional security for flats with common areas

2.41 Some 3 million flats had common areas shared with other flats and the survey records the presence of additional security measures for these dwellings.

2.42 About three quarters (73%) of these flats had a controlled entry system, most (93%) of which were working at the time of survey. These systems were most prevalent in the housing association sector (79%), northern regions (78%), city centres and other urban areas (74–75%). Those flats least likely to benefit from this feature were those in the private rented sector (65%) and those located in village centres and other rural areas (53%) (see Annex Table 2.25).

2.43 Concierges were less common being present in 182,000 (6%) of these flats. Of those flats with a concierge service, around one third (33%) were owner occupied, 17% were privately rented and the remaining 50% were split evenly between housing associations and local authorities. Whilst flats in the northern regions were more likely to have a concierge than those located elsewhere (8%), over half of all dwellings with concierges were located in south east regions (see Annex Table 2.26).

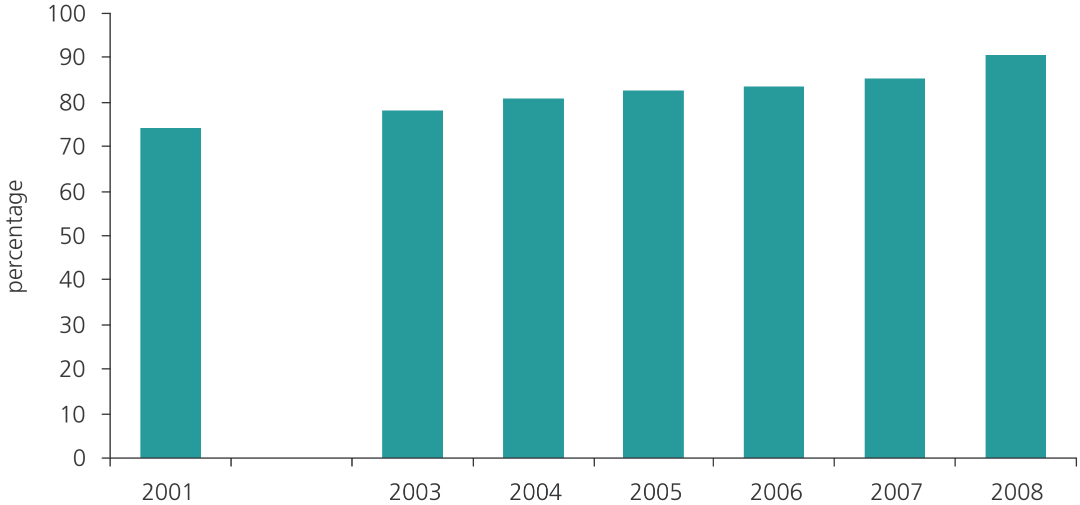
Additional security for dwellings with shared amenities

2.44 Around 4 million dwellings, both flats and houses, had some type of shared facilities and about one in eight (13%) of these had CCTV. CCTV was much more common for flats than houses (15% compared with 3%). Social rented dwellings, those located in city centres and other urban centres and those in the most 20% deprived areas were also more likely to have CCTV than private sector dwellings or those in other areas. About half (53%) of all dwellings with CCTV were located in south east regions (see Annex Tables 2.27 and 2.28).

Smoke alarms

2.45 There has been a gradual increase in the percentage of households living in dwellings with one or more working smoke alarms, from 74% in 2001 to some 91% of households in 2008, Figure 2.16.

Figure 2.16: Percentage of households with smoke alarms, 2001 to 2008



Base: all households
Note: underpinning data are presented in Annex Table 2.29
Source: English House Condition Survey 2001 to 2007 and English Housing Survey 2008, household sub-sample

2.46 Private tenants were less likely to have these than those renting from housing associations (87% compared with 94%). Households in the newest dwellings built after 1990 were the most likely to have a smoke alarm (97%) and those in the oldest pre 1919 built dwellings the least likely (88%). The largest variations in the presence of smoke alarms were in relation to dwelling type. Only 86% of those in converted flats had smoke alarms compared with 94% in detached houses (see Summary Statistics Table SST 2.10).

2.47 Other groups that were slightly less likely than average to possess smoke alarms were: multi-person households and those who had lived in their home for less than one year (88%) together with ethnic minority households and one person households aged under 60 (87%) (see Summary Statistics Table SST 2.12).

Chapter 3
External environments

This chapter steps outside the dwelling considering the size and type of plots and gardens. It then moves beyond the boundary to examine the type of road and the parking provision present. Finally, it looks at the wider local area examining which types of problems are most prevalent and which dwellings are most likely to be located in areas with significant problems in the local environment.

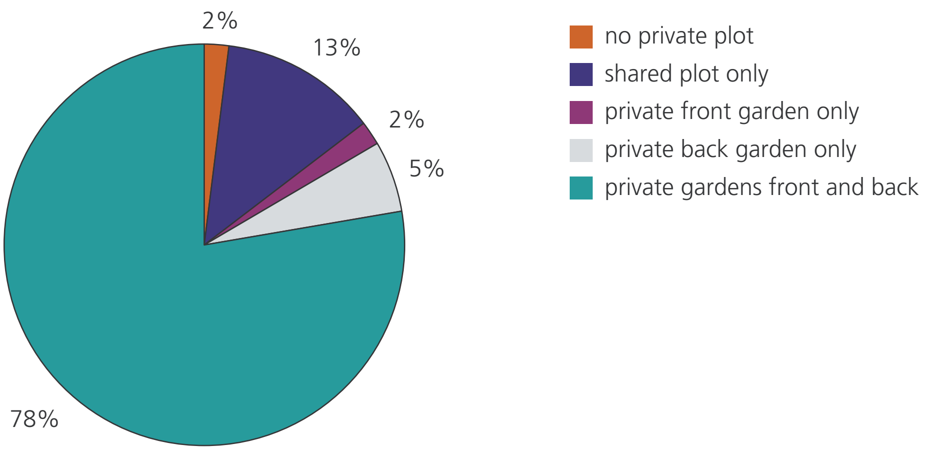
Key findings

- **The majority of dwellings (85%) had some kind of private plot and most had these at both the front and rear. A surprisingly large proportion of flats (25%) had private gardens.**
- **Not all of these private plots consisted of greenery. Almost a third (30%) of front plots and 15% of rear plots, had the area largely or wholly covered by hard landscaping materials (concrete, paving, gravel, tarmac etc.).**
- **One in seven (14% of) dwellings were located on main or major trunk roads although this was significantly higher for older dwellings. Some 25% of dwellings built before 1919 and 20% of those built between 1919 and 1945 were located on such roads.**
- **Some 41% of dwellings had a garage and a further 25% had some other off-street parking, but one in six (15%) had to rely on inadequate street parking.**
- **Altogether about one in six (16% of) dwellings were affected by at least one significant problem in the local environment. These were most commonly concerned with parking and traffic – nuisance from street parking, heavy traffic and intrusion from motorways or arterial roads.**
- **Flats and terraced houses and dwellings that were rented or located in city centres or in northern regions were more likely to have significant problems in the local environment than other types or locations.**
- **Dwellings located in the most deprived areas were the least likely to have any private outdoor space. Where such space exists, it was more likely to be visually unappealing with a high proportion of hard landscaping and significant problems in the local environment.**

Plots and gardens

3.1 The majority of dwellings (85%) had some kind of private plot and most had these at both the front and rear, Figure 3.1. One in seven dwellings had shared plots and about 2% had no defined plot around the house or block of flats. Where dwellings had a private plot at the front, these were on average 7.2m deep. Rear plots tended to be larger averaging 15.3m in depth.

Figure 3.1: Proportion of dwellings with different types of private and shared plots, 2008



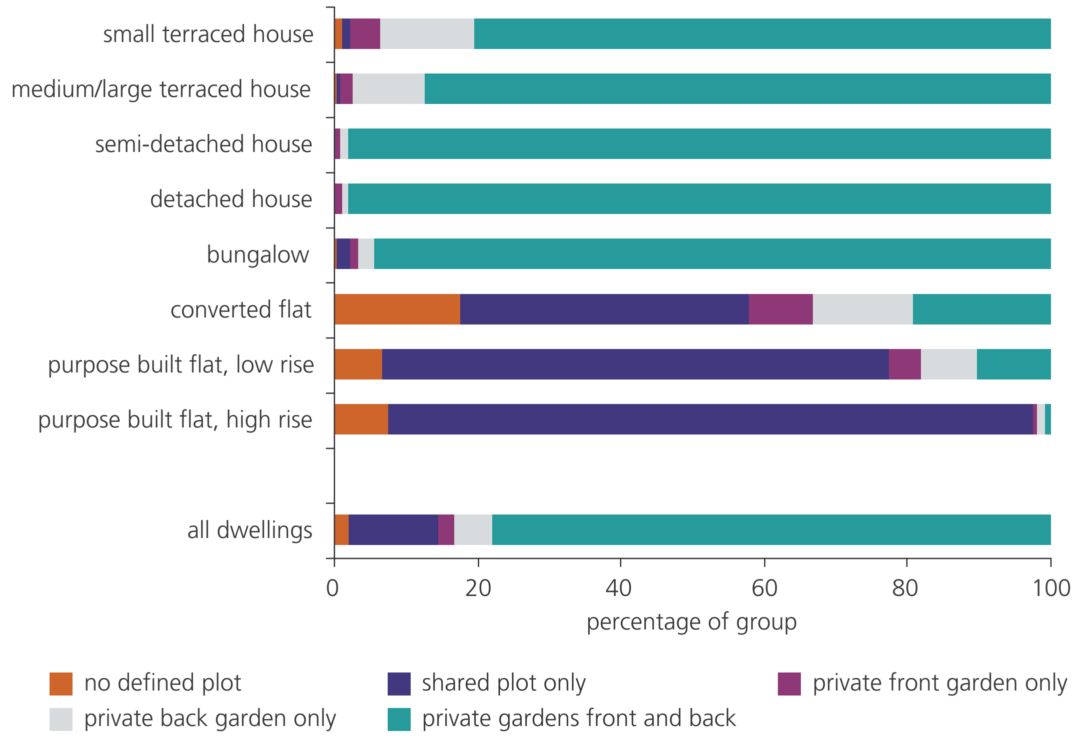
Base: all dwellings
Note: underpinning data are presented in Annex Table 3.1
Source: English Housing Survey 2008, dwelling sample

3.2 Looking first at houses, 93% had a private plot at both the front and rear. Small terraced houses were more likely than other house types to have a rear plot only, Figure 3.2. Some 25% of flats had some private plot and this rose to 42% for converted flats. However, shared plots were the norm for most flats with 66% having this type.

3.3 Owner occupied dwellings were much more likely to have private front and back plots than rented dwellings (88% compared with 55–59%).

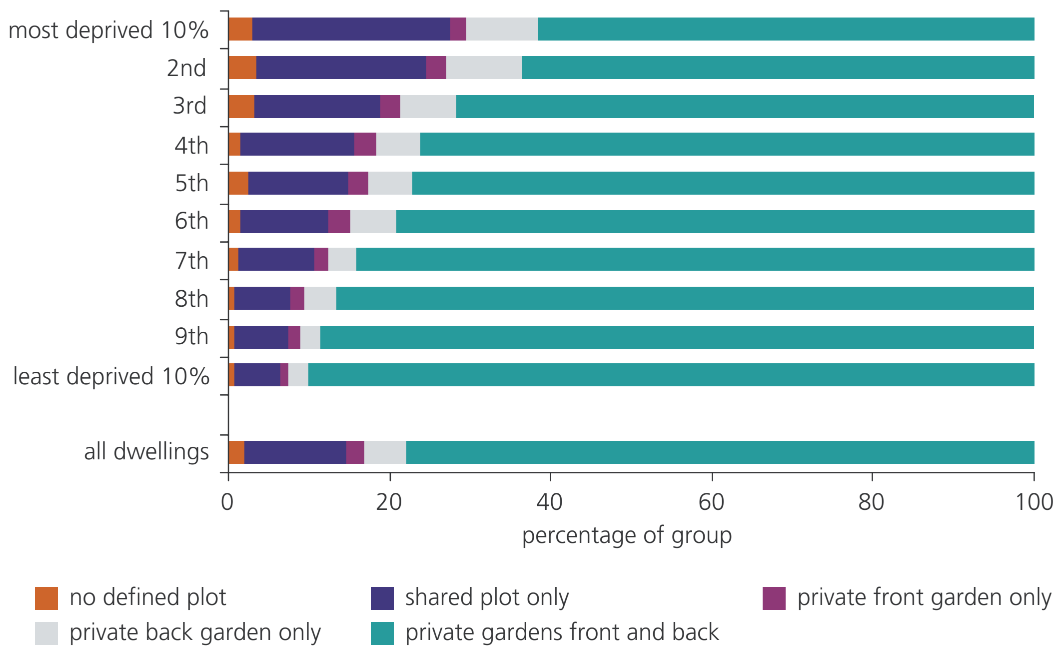
3.4 Over a quarter (28%) of dwellings in the most deprived areas had no private outdoor space, Figure 3.3. Only 61% of dwellings in the most deprived areas had private front and rear plots compared with 90% in the least deprived areas.

Figure 3.2: Type of plot by dwelling type, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.1
Source: English Housing Survey 2008, dwelling sample

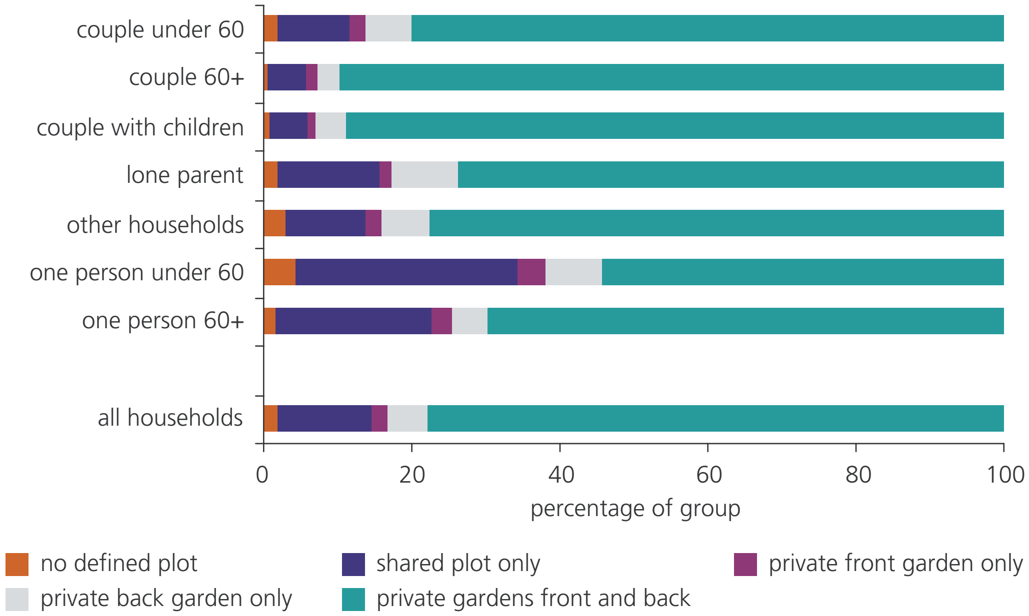
Figure 3.3: Type of plot by deprived local areas, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.2
Source: English Housing Survey 2008, dwelling sample

3.5 One-person households, especially those where the person was aged 60 or over, were less likely to have private front and back plots than other types of households with only 54% of this group having these, Figure 3.4. Lone parents were less likely to have private front and back plots than couples with children (74% compared with 89%).

Figure 3.4: Type of plot by household type, 2008

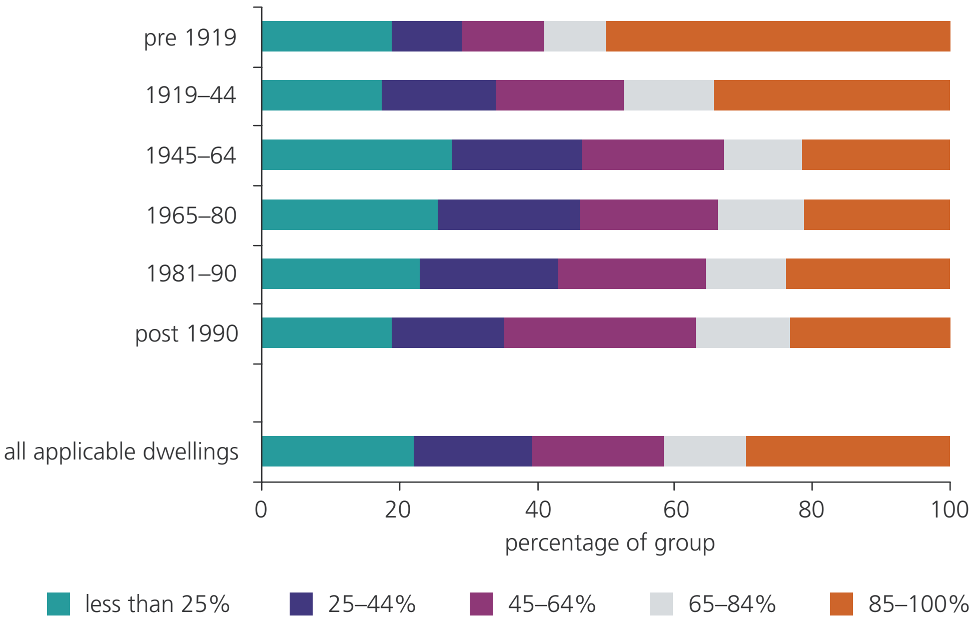


Base: all households
Note: underpinning data are presented in Annex Table 3.3
Source: English Housing Survey 2008, household sub-sample

3.6 Not all of these private plots were 'gardens' in the traditional sense of consisting mainly of grass or planting. Looking first at front plots, almost a third (30%) had the area almost or totally covered in hard landscaping materials (concrete, paving, gravel, tarmac etc.). This rose to 48% for city and urban centres and 50% for dwellings built before 1919, Figure 3.5.

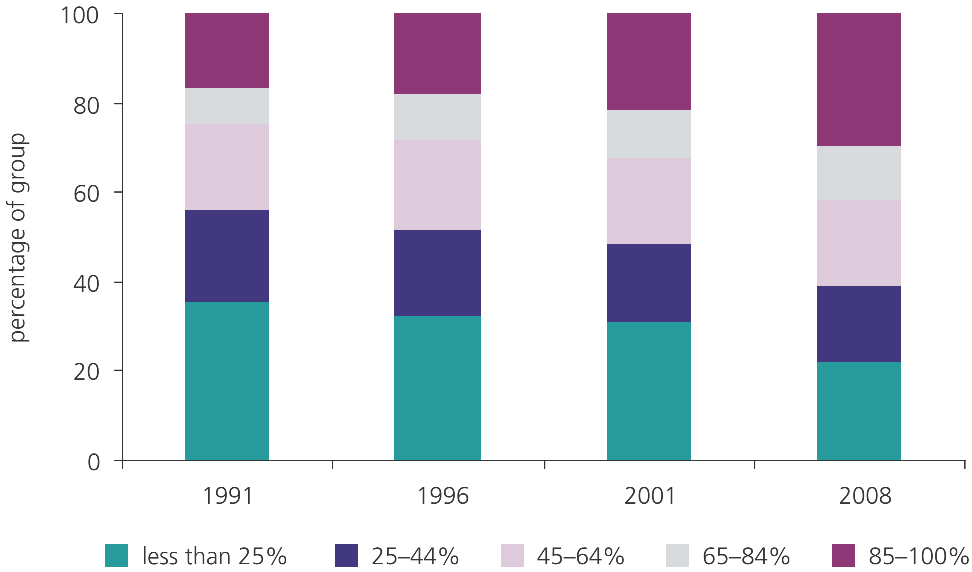
3.7 Hard landscaping on front plots has increased in recent years. In 1991 about 16% of front plots were largely or wholly hard landscaped and this had increased to 30% in 2008, Figure 3.6. Progressively more restrictions on street parking combined with increased car ownership were probably the main reasons behind this but fashion or reduced maintenance may also have been factors.

Figure 3.5: Proportion of front plot that is hard landscaped by dwelling age, 2008



Base: all dwellings with private front plot
Note: underpinning data are presented in Annex Table 3.4
Source: English Housing Survey 2008, dwelling sample

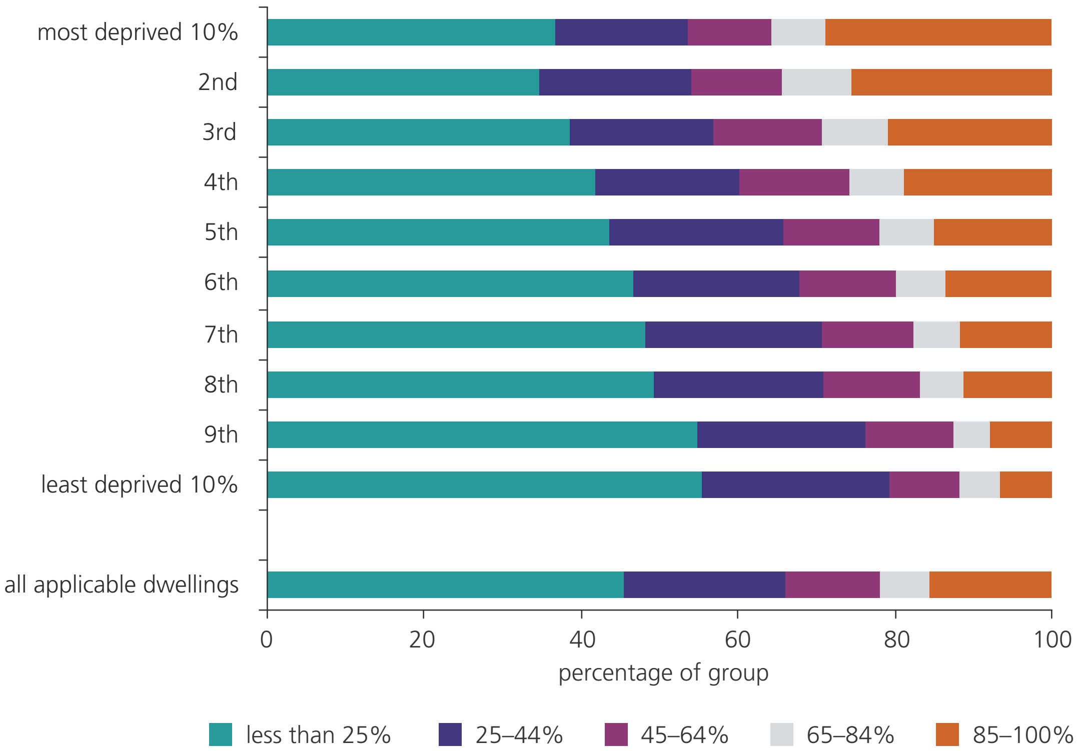
Figure 3.6: Proportion of front plot that is hard landscaped, 1991–2008



Base: all dwellings with private front plot
Note: underpinning data are presented in Annex Table 3.19
Source: English House Condition Survey 1991–2001, English Housing Survey 2008, dwelling sample

3.8 Hard landscaping was less prevalent for rear plots with just 15% of dwellings having the rear garden largely or wholly covered in hard landscaping. Like front plots, hard landscaping at the rear was associated with dwellings built before 1919 and those located in urban and city centres. It was also more commonly found in private rented dwellings and dwellings located in the northern regions. The presence of hard landscaped rear plots was strongly related to deprivation. Just 7% of dwellings in the least deprived areas had the rear plot largely or wholly hard landscaped compared with 29% in the most deprived areas, Figure 3.7.

Figure 3.7: Percentage of rear plot that is hard landscaped by deprived local areas, 2008

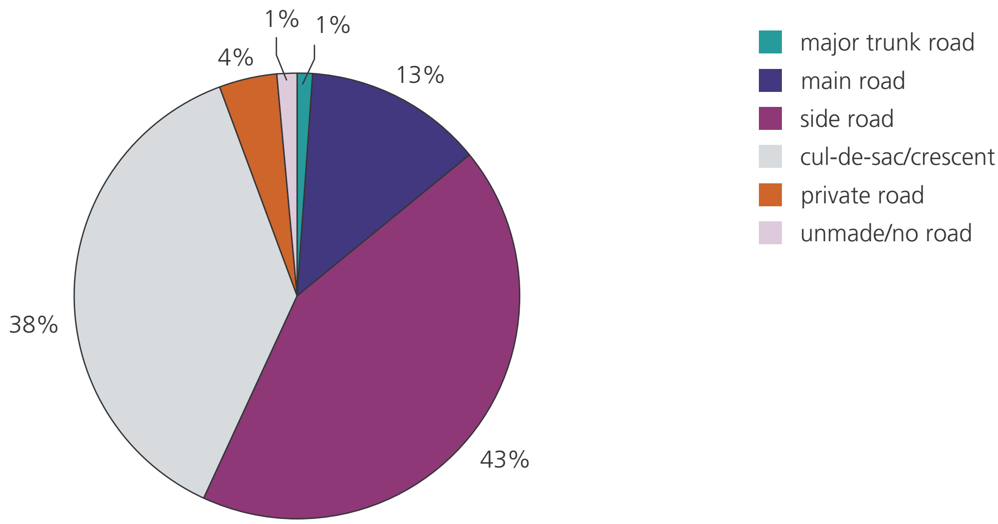


Base: all dwellings with private rear plot
Note: underpinning data are presented in Annex Table 3.5
Source: English Housing Survey 2008, dwelling sample

Type of road

3.9 About one in seven (14% of) dwellings were located on main roads or major trunk roads with about 38% in cul-de-sacs or crescents, Figure 3.8.

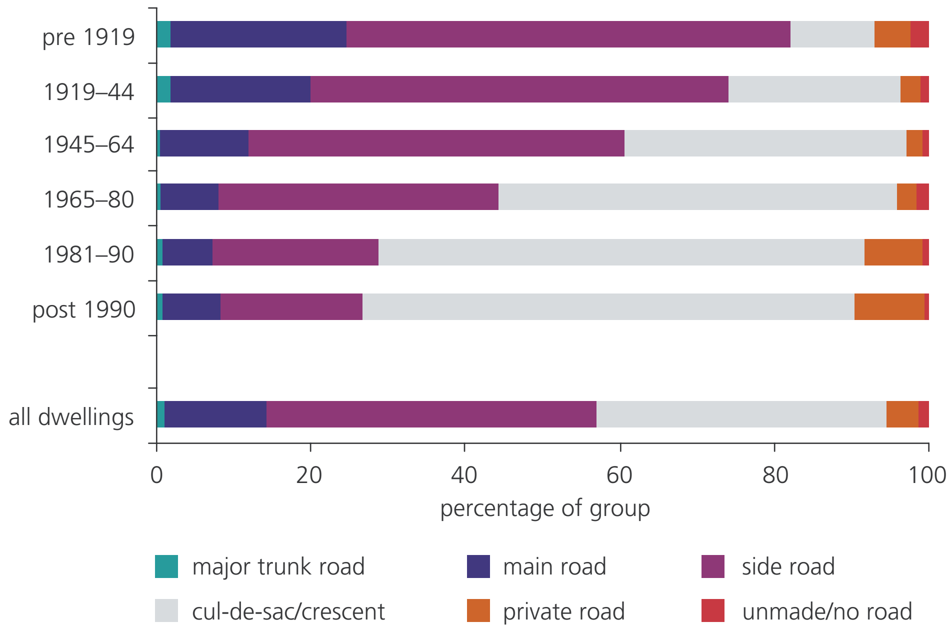
Figure 3.8: Type of road the dwelling was located on, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.6
Source: English Housing Survey 2008, dwelling sample

3.10 Older dwellings were more likely to be located on major, main or side roads and far less likely to be located in cul-de-sacs or crescents than newer dwellings, Figure 3.9. Just 11% of dwellings built before 1919 and 22% of those built between 1919 and 1945 were located in these no-through roads compared with over 60% of dwellings built after 1980.

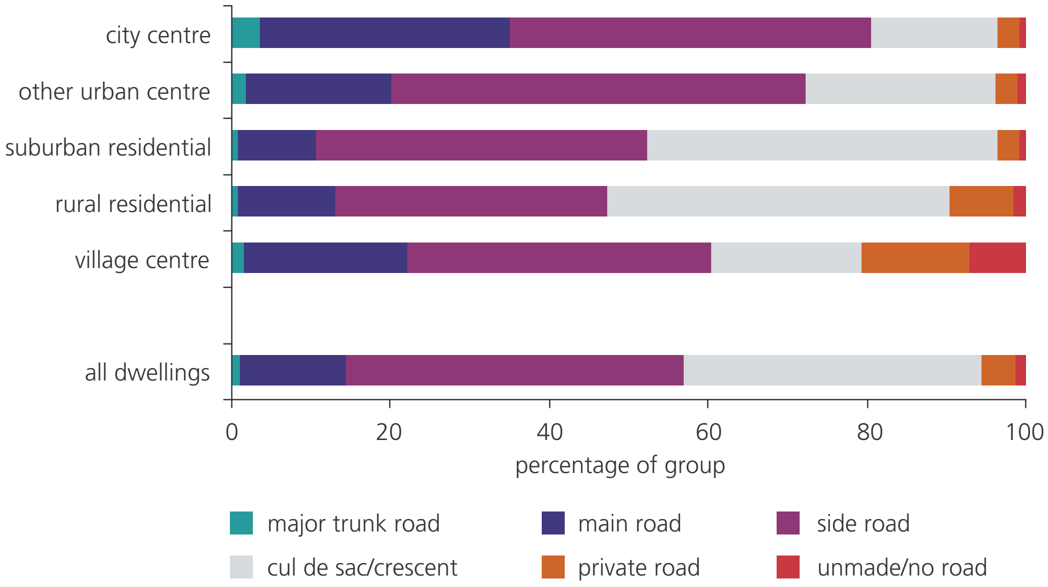
Figure 3.9: Dwelling age by type of road, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.6
Source: English Housing Survey 2008, dwelling sample

3.11 As one would expect, dwellings in suburban areas were far less likely to be located on major or main roads than those in other areas. Over a third (32%) of dwellings in city centres, 22% in village centres and 20% in other urban areas were located on such roads compared with 11% in suburban areas, Figure 3.10. One in five (21% of) dwellings in village centres and rural areas were located on private or unmade roads.

Figure 3.10: Type of area by type of road, 2008



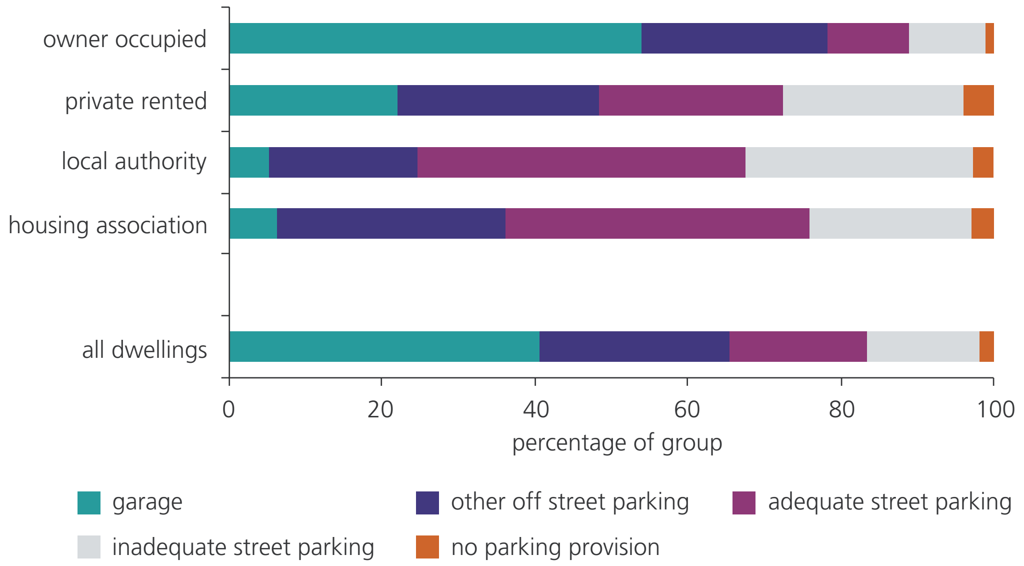
Base: all dwellings
Note: underpinning data are presented in Annex Table 3.7
Source: English Housing Survey 2008, dwelling sample

Parking provision

3.12 Some 41% of dwellings had a garage and 25% had other off street parking. However, one in six (15% of) dwellings relied on inadequate street parking and 2% had no parking whatsoever. Over three quarters (78%) of owner occupied dwellings had either a garage or other off road parking compared to 49% of private rented, 36% of housing association and 25% of local authority dwellings, Figure 3.11. The private rented sector had the highest proportion of dwellings with no parking provision whatsoever (4%).

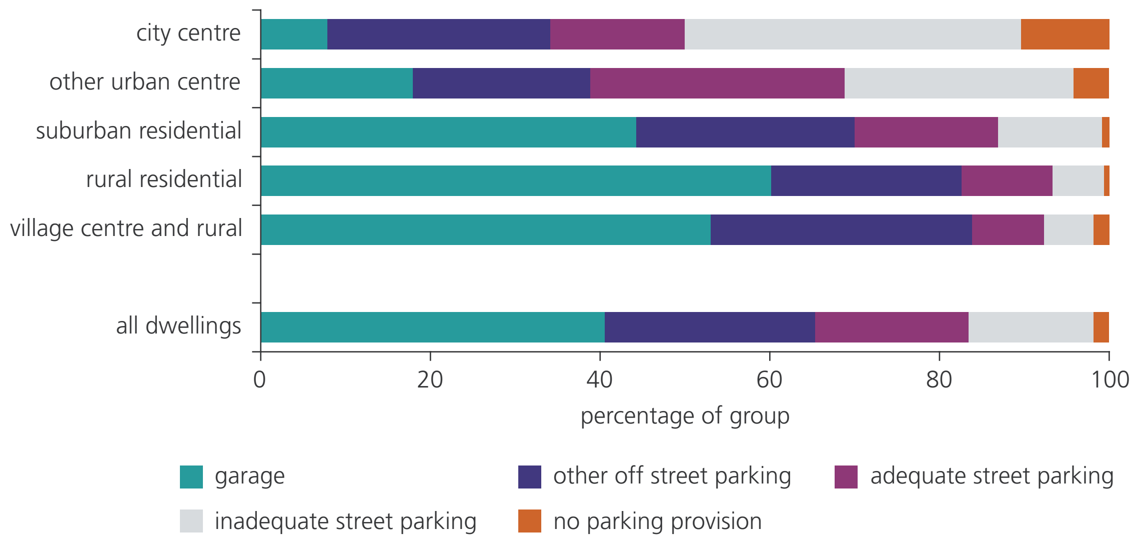
3.13 The majority of dwellings (84%) in generally rural areas had either a garage or other off street parking compared with just a third (34%) of those in city centres and 39% in other urban areas, Figure 3.12. One in ten city centre dwellings had no parking provision whatsoever.

Figure 3.11: Parking provision by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.8
Source: English Housing Survey 2008, dwelling sample

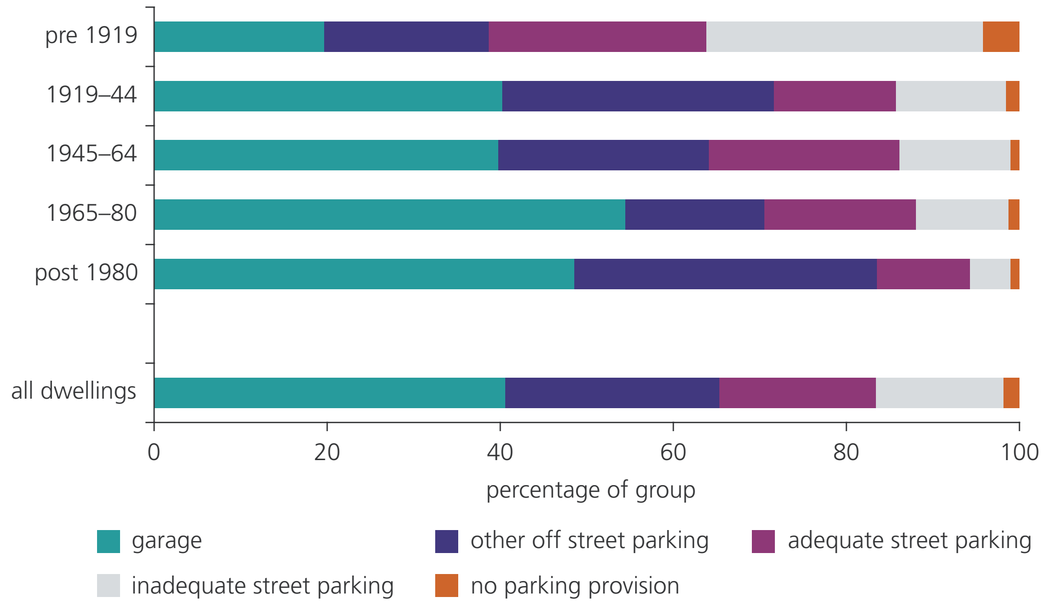
Figure 3.12: Parking provision by type of area, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.9
Source: English Housing Survey 2008, dwelling sample

3.14 Parking provision was less adequate for pre 1919 dwellings than newer dwellings. Only one fifth (20%) of the oldest pre 1919 dwellings had a garage and 32 % had to rely on inadequate street parking. In contrast over half (55%) of dwellings built between 1965 and 1980 had a garage, Figure 3.13.

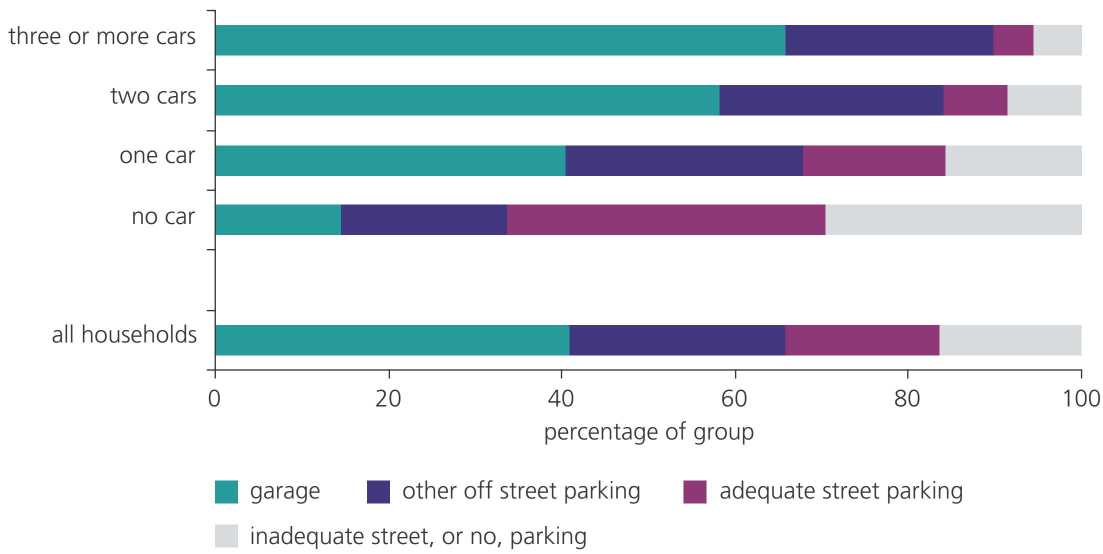
Figure 3.13: Parking provision by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.10
Source: English Housing Survey 2008, dwelling sample

3.15 Parking was not necessarily an issue for all households with almost a quarter of them (23%) not having a car. However, people who visited them may have had cars and needed to park. The more cars a household had, the more likely they were to have a garage or other off street parking. About 10% of households with 3 or more cars were reliant on street parking compared with 16% with two cars, 32% with one car and 67% with no cars, Figure 3.14.

Figure 3.14: Parking provision by car ownership, 2008



Base: all households
Note: underpinning data are presented in Annex Table 3.11
Source: English Housing Survey 2008, household sub-sample

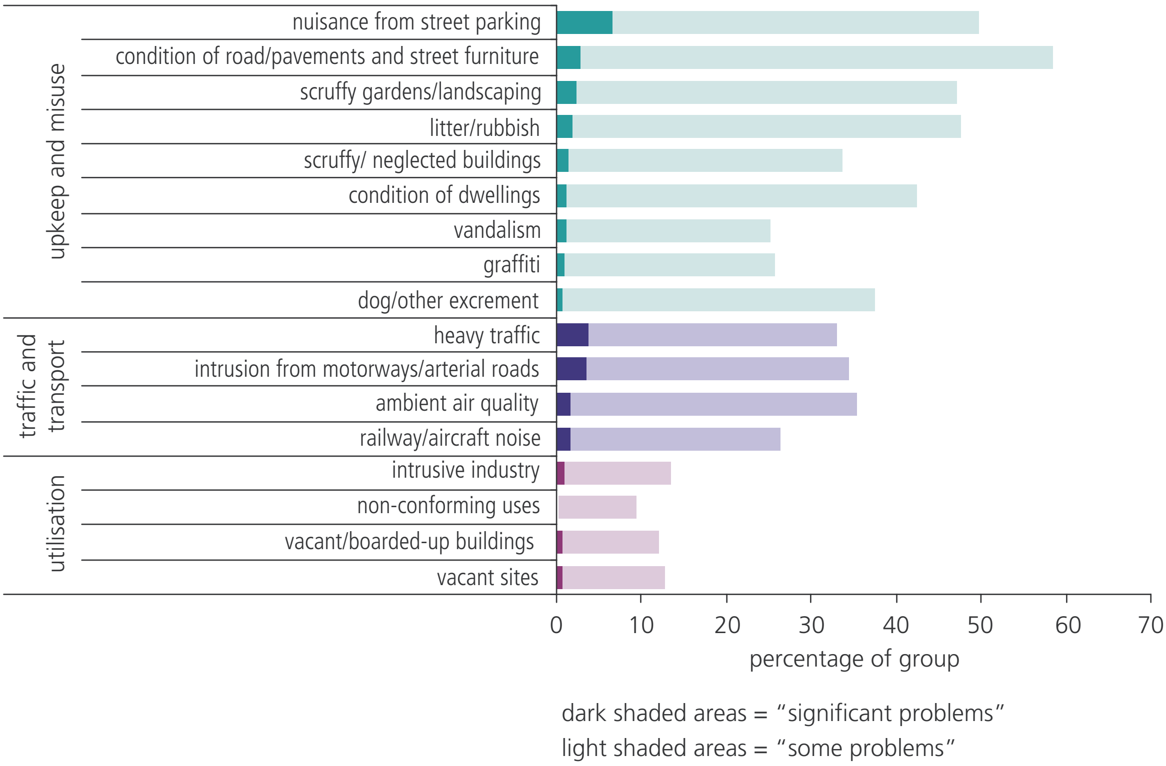
Problems in the local environment

3.16 The information presented here is from the surveyors' assessments and observations rather than the occupants' assessments or opinions. The surveyors' assessments will miss some problems because they represent a snapshot at the time of survey e.g. at the time of their visit there may be no problem of street parking. However, because they are impartial and made according to the same specified guidelines, surveyors' assessments provide a more consistent benchmark for comparing the level and seriousness of problems in different types of areas than those made by the occupants.

3.17 These problems can have a significant impact on the way that residents feel about their home and neighbourhood. Some types of problems are symptomatic of wider social and economic problems such as anti-social behaviour and low demand. Some can adversely affect the physical and mental health of residents e.g. accumulations of rubbish may attract vermin, high levels of air pollution may trigger or aggravate respiratory conditions etc.

3.18 The most common problems noted by surveyors related to the condition of roads, paths and street furniture, nuisance from street parking and litter/rubbish. Around half of all dwellings had a problem with one or more of these aspects; although in most cases these problems were relatively minor, Figure 3.15. The level of significant problems was much lower and the most common significant problems were concerned with parking and traffic – nuisance from street parking (7%) heavy traffic (4%) and intrusion from motorways or arterial roads (4%).

Figure 3.15: Proportion of dwellings with different problems in the local environment, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.12
Source: English Housing Survey 2008, dwelling sample

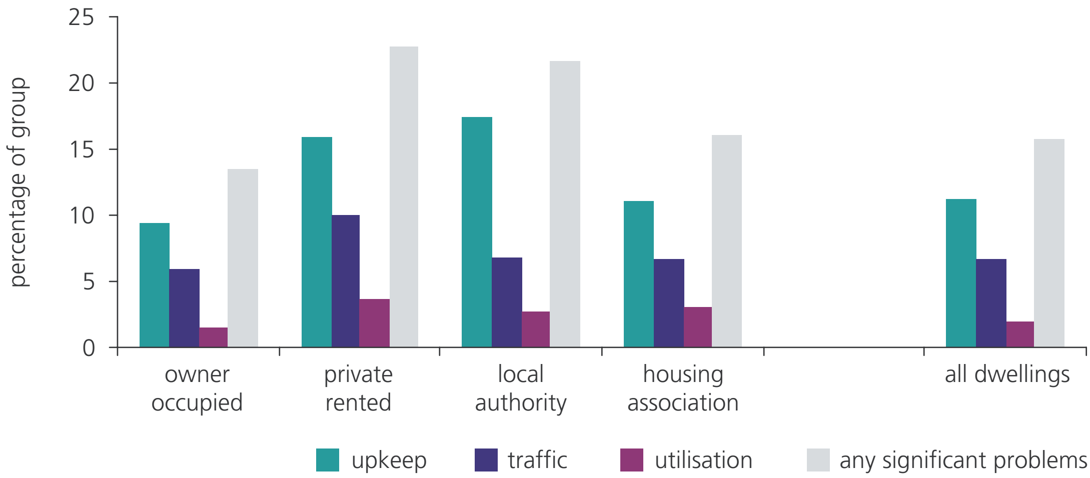
3.19 The problems can be grouped into three main types as below:

> **Utilisation** – vacant sites, vacant or boarded-up buildings, non-conforming uses and intrusive industry
>
> **Traffic and transport** – heavy traffic, intrusion from motorways or arterial roads, railway/aircraft noise and ambient air quality.
>
> **Upkeep and misuse** – litter/rubbish, graffiti, dog/other excrement, condition of dwellings, vandalism, scruffy gardens/landscaping, scruffy/ neglected buildings, condition of road/pavements and street furniture and nuisance from street parking

3.20 Significant problems with upkeep and misuse were the most common affecting some 11% of dwellings. Some 7% of dwellings were affected by significant problems relating to traffic and 2% by significant problems around utilisation. Altogether about one in six (16% of) dwellings were affected by at least one of these.

3.21 The incidence and type of significant problems varied substantially for different groups of dwellings. Private rented dwellings were the most likely to be located in areas with significant problems in the local environment (23%) followed shortly by those rented from local authorities (22%), Figure 3.16. The private rented stock fared particularly badly in relation to traffic with 10% of privately rented dwellings having these problems compared with 6–7% in other tenures. The level of significant problems related to upkeep was very similar for local authority and private rented dwellings (17% and 16% respectively) and much higher than that for housing association or owner occupied dwellings (11% and 10% respectively).

Figure 3.16 Proportion of dwellings with significant problems in the local environment by tenure, 2008

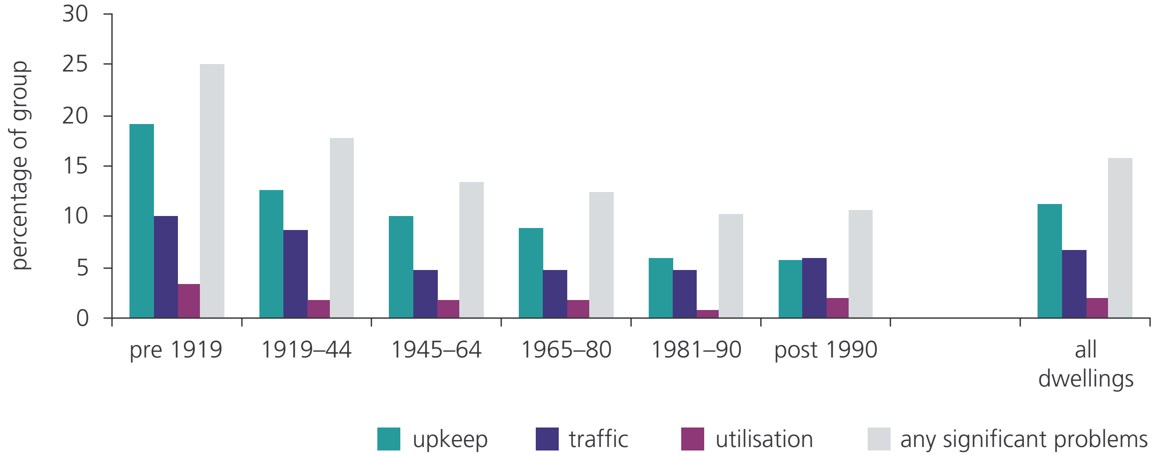


Base: all dwellings
Note: underpinning data are presented in Annex Table 3.13
Source: English Housing Survey 2008, dwelling sample

3.22 Generally speaking, the older the dwelling, the more likely it was to be located in an area with significant problems in the local environment. A quarter of pre 1919 dwellings were located in areas with such problems compared with 10–11% of those built after 1980, Figure 3.17. This trend is most pronounced for problems related to upkeep and traffic. Dwellings built after 1990 were at least as likely to have problems related to utilisation as other groups with the exception of the oldest pre 1919 dwellings.

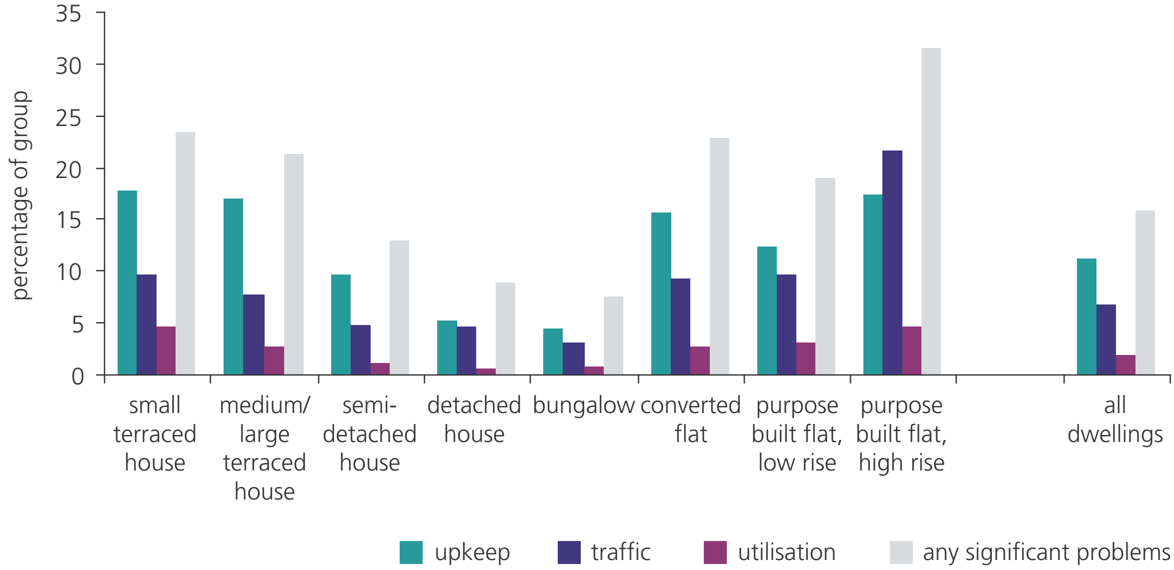
3.23 Flats and terraced houses were more likely to be situated in areas with significant problems of all types. Around a third (32%) of high rise flats were located in areas with significant problems compared with 8% of bungalows and 9% of detached houses, Figure 3.18.

Figure 3.17: Proportion of dwellings with significant problems in the local environment by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.14
Source: English Housing Survey 2008, dwelling sample

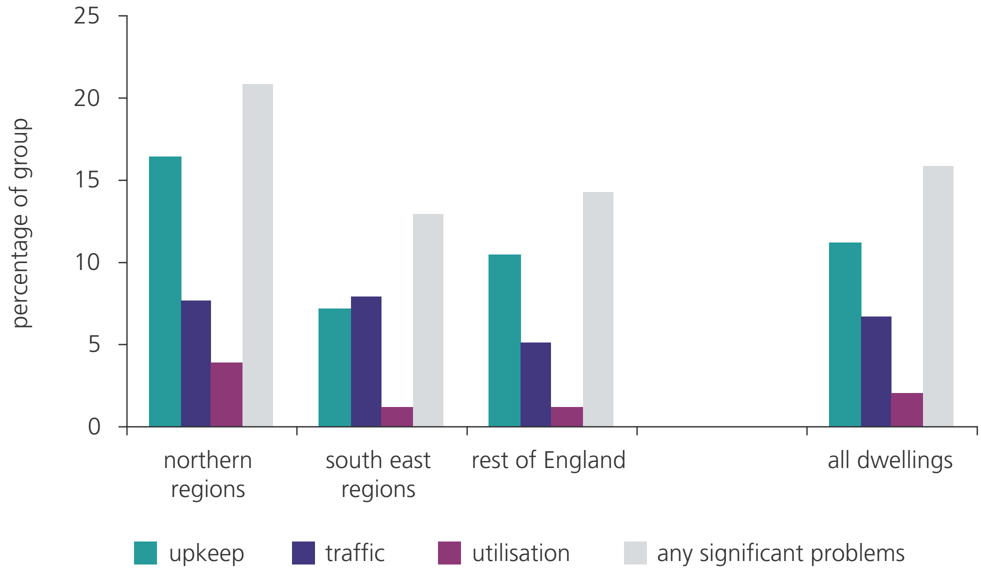
Figure 3.18: Proportion of dwellings with significant problems in the local environment by dwelling type, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.15
Source: English Housing Survey 2008, dwelling sample

3.24 Dwellings in the northern regions were more likely to have significant problems in the local environment than those located elsewhere. Some 21% of dwellings in these parts of the country had such problems compared with 13% in the south east regions and 14% in the rest of England, Figure 3.19. However, it should be noted that the level of problems in London itself is likely to be higher than that for the south east. The main differences were in the level of problems related to upkeep and utilisation as dwellings in the northern regions were equally likely to have significant problems with traffic as those in the south east regions. One in six (17% of) dwellings in the northern regions were located in environments with serious problems of upkeep compared with 7% in the south east regions and 11% in the rest of England.

Figure 3.19: Proportion of dwellings with different types of significant problems in the local environment by region, 2008

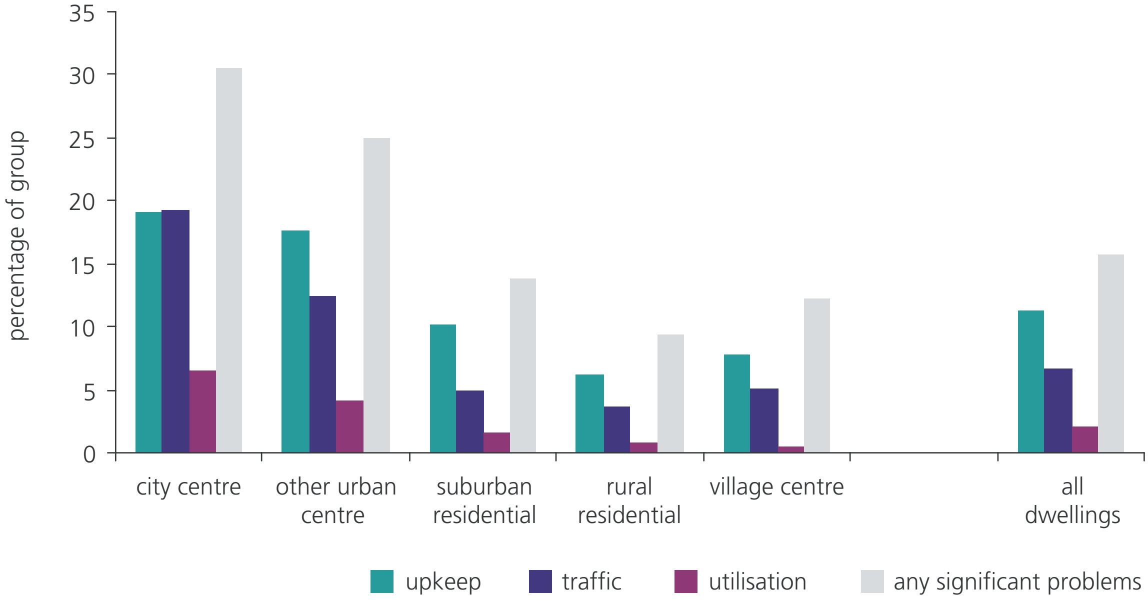


Base: all dwellings
Note: underpinning data are presented in Annex Table 3.16
Source: English Housing Survey 2008, dwelling sample

3.25 Not surprisingly, dwellings in city and urban centres were most likely to have significant problems in the local environment. Almost a third (31%) of city centre dwellings and a quarter (25%) in other urban areas were in environments with significant problems compared with 9–14% of dwellings in other types of area, Figure 3.20.

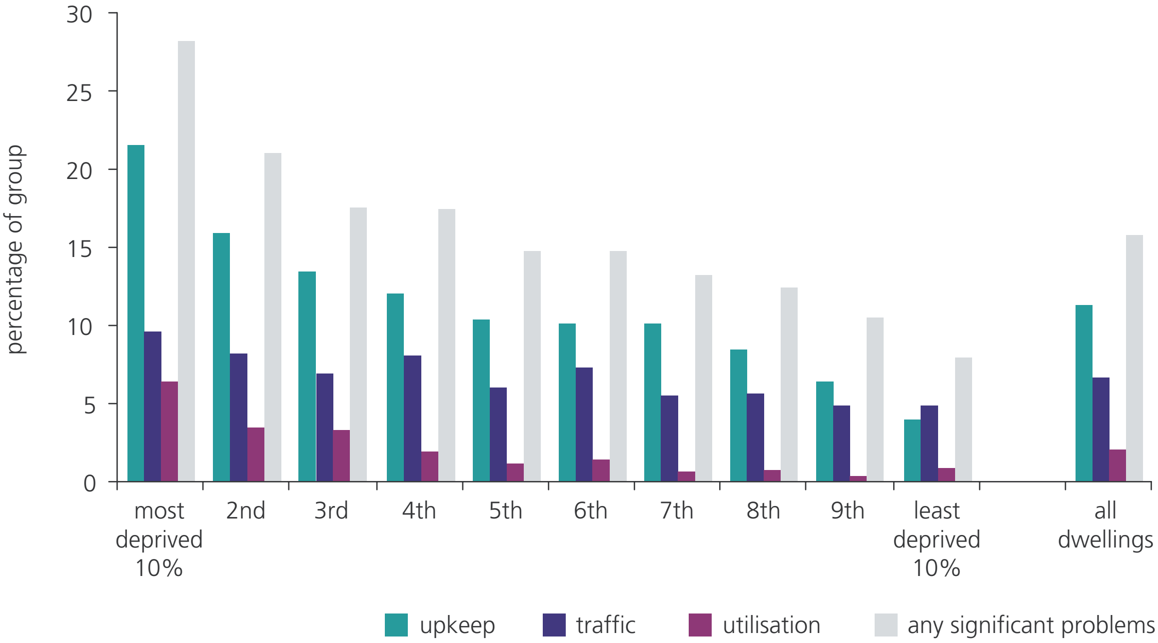
3.26 The more deprived an area, the more likely dwellings located there were to have significant environmental problems. Over a quarter (28%) of dwellings in the most deprived areas had such problems compared with just 8% in the least deprived, Figure 3.21. These differences were most pronounced with respect to upkeep – 22% of dwellings in the most deprived areas had these types of problems compared with 4% in the least deprived.

Figure 3.20: Proportion of dwellings with different types of significant problems in the local environment by type of area, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.19
Source: English Housing Survey 2008, dwelling sample

Figure 3.21: Proportion of dwellings with different types of significant problems in the local environment by local area deprivation, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 3.17
Source: English Housing Survey 2008, dwelling sample

Chapter 4
Stock condition

This chapter examines the incidence, cost and nature of disrepair within the stock, and how these have changed over time. It then examines other aspects of dwelling condition: dampness, ventilation, electrical wiring and HHSRS (Housing Health and Safety Rating System) Category 1 hazards, highlighting which types of dwellings and households are most likely to have problems with these aspects. Decent Homes is not covered in this chapter but key figures are provided in the Summary Statistic tables.

Key findings

- **The repairs required to the total housing stock in the next ten years were estimated to cost £88.6 billion. The bulk of this amount (89%) is required in the private sector.**
- **Since 2001 there has been a significant reduction in the amount of disrepair. The largest improvements have been for private rented dwellings, converted flats and dwellings in city centres; however the average costs for these groups of dwellings were still higher than other groups in 2008.**
- **Around 1.7 million (8%) dwellings had some form of damp problems. These problems were more likely to occur in private rented dwellings, converted flats and dwellings built before 1919. Households that were overcrowded according to the bedroom standard were also much more likely to live in damp dwellings – almost a quarter (22%) of these households had some damp.**
- **The vast majority of the stock (98%) had modern PVC sheathed wiring and 91% had modern earthing wires. However a significant minority of dwellings lacked modern electrical safety features such as RCDs (residual current devices) (41%) and MCBs (miniature circuit breakers) (31%). Households aged 60 or over were far more likely to live in dwellings that lacked these features.**
- **Just over 5 million (23%) dwellings had one or more Category 1 HHSRS hazards. One in seven (13% of) dwellings had a Category 1 hazard related to falls (on stairs, on the level, between levels or associated with baths). Almost one in ten (9% of) dwellings had a Category 1 excess cold hazard.**

Disrepair

Types of faults

4.1 Just over half (54%) of dwellings had faults to one or more elements making up the exterior fabric of the building in 2008. The elements most commonly affected were wall finish (pointing, rendering, cladding etc.) and windows, Table 4.1. Faults to the interior fabric were less prevalent affecting 30% of dwellings and were most commonly associated with ceilings.

Table 4.1: Dwellings with faults to different building components, 2008

all dwellings

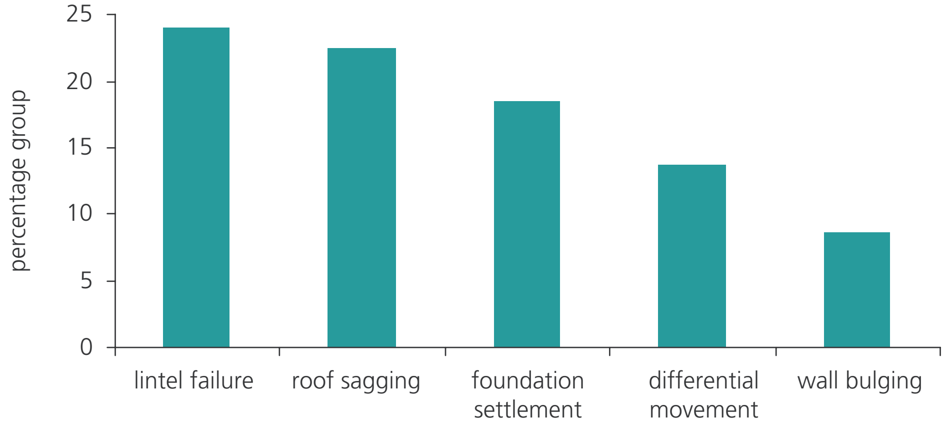
	percentage	number (000s)		percentage	number (000s)
exterior fabric			**interior fabric**		
wall finish	22.6	5,026	ceilings	16.9	3,758
windows/frames	18.5	4,114	walls	12.4	2,758
roof covering	15.6	3,469	doors	10.8	2,402
chimney stacks	15.1	3,358	floors	5.8	1,290
gutters/downpipes	13.6	3,025	**any interior faults**	**30.2**	**6,716**
doors/frames	12.2	2,713			
fascias	11.3	2,513	**building structure**		
wall structure	4.8	1,067	any structural faults	8.4	1,868
stacks/wastes	5.2	1,156			
valley gutter	4.6	1,023	**services and amenities**		
roof structure	3.2	712	fences	15.0	3,336
bays	2.7	600	kitchen	12.9	2,869
DPC (damp proof course)	3.3	734	boundary walls	9.5	2,113
porches	2.0	445	bathroom	8.7	1,935
conservatories	1.6	356	primary services (gas and electricity)	11.1	2,469
party parapets	0.8	178			
dormers	0.7	156	CH boiler/distribution	5.3	1,179
balconies	0.4	89	other heating	3.1	689
any exterior faults	**54.4**	**12,098**	hot water	2.3	512

Source: English Housing Survey 2008, dwelling sample

4.2 Some 1.9 million dwellings (8%) had some form of structural problem or defect, which can affect the integrity of the building as a whole and can be expensive to remedy. They can be caused by a variety of factors including poor initial design and/or materials, disrepair, 'improvement' works such as removing internal walls not being carried out properly, planting certain types of trees too close to buildings and insect attack.

4.3 Structural defects were more common in dwellings built before 1919 (19%), converted flats (18%) and private rented dwellings (13%). The majority of dwellings with structural problems (81%) had just one type of problem. The five most common structural problems were lintel failure, roof sagging, foundation settlement (leading to diagonal cracking in brickwork), differential movement (causing cracking of walls or cladding) and wall bulging (due to failed wall ties or thermal expansion), Figure 4.1.

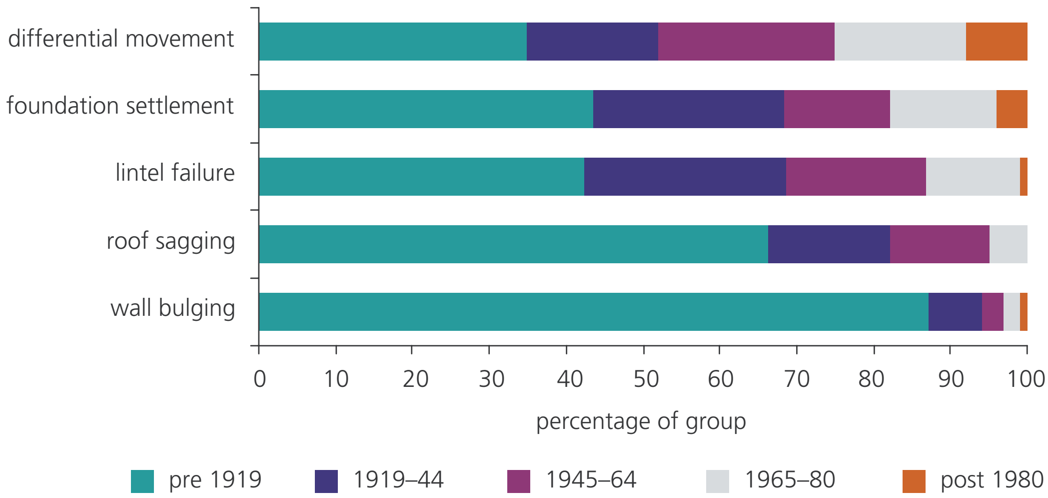
Figure 4.1: Percentage of dwellings structural defects, by type of defect 2008



Base: all dwellings with structural defects
Notes:
1) includes the five most common structural defects only
2) underpinning data are presented in Annex Table 4.2
Source: English Housing Survey 2008, dwelling sample

4.4 Some of these problems were strongly associated with older dwellings. Some 88% of dwellings with wall bulging and two thirds with roof sagging were built before 1919, Figure 4.2. Other problems are more evenly spread across the range; for example almost half (48%) of dwellings with differential movement problems were built after 1945.

Figure 4.2: Percentage of dwellings with different types of structural defects in each age band, 2008



Base: all dwellings with that particular defect
Note: underpinning data are presented in Annex Table 4.3
Source: English Housing Survey 2008, dwelling sample

4.5 Around one in six (17%) flats had some faults in the common areas; most frequently in the staircases, Table 4.2. Within common areas, faults were most often associated with walls and ceilings e.g. damaged plasterwork. In addition, over a third (37%) of flats had some faults to shared facilities – most commonly to landscaping.

Table 4.2: Flats with faults to different components of common areas and shared facilities, 2008

all flats

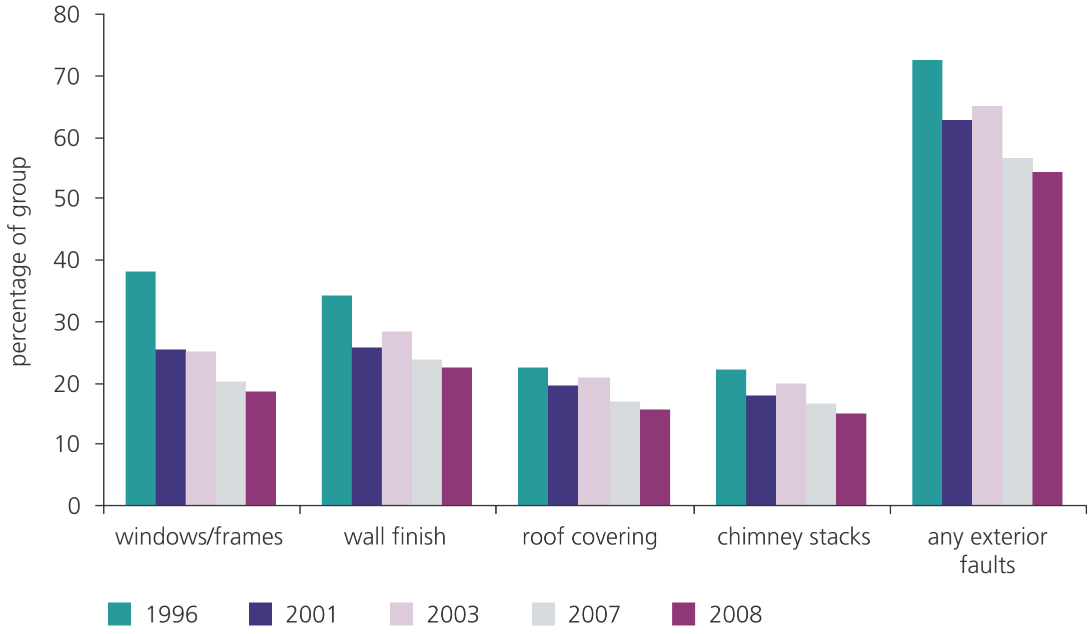
	percentage of flats	number of flats (000s)		percentage of flats	number of flats (000s)
faults to common areas			**faults to shared facilities**		
walls	7.9	328	landscaping	29.8	1,234
ceilings	6.0	250	communal parking	10.9	451
floors	5.1	209	stores/common rooms	9.5	395
access doors	4.3	177	surfaces/fences	9.5	392
access windows	3.6	151	common electrical services	4.2	174
access lighting	2.5	102			
balustrades	2.3	94			
any faults in stairways	10.0	415			
any faults in common areas	16.8	697	any faults in shared facilities	37.0	1,532
all with common areas	**73.3**	**3,038**	**all with shared facilities**	**79.0**	**3,272**

Note: figures relate to all flats and not just those with common areas or shared facilities
Source: English Housing Survey 2008, dwelling sample

4.6 The incidence of all types of faults decreased between 1996 and 2008, Figures 4.3 and 4.4. The breakdown of faults within these broad categories was remarkably constant through the period – wall finish and windows being the exterior components most likely to have faults, and ceilings being the most common interior component with a fault.

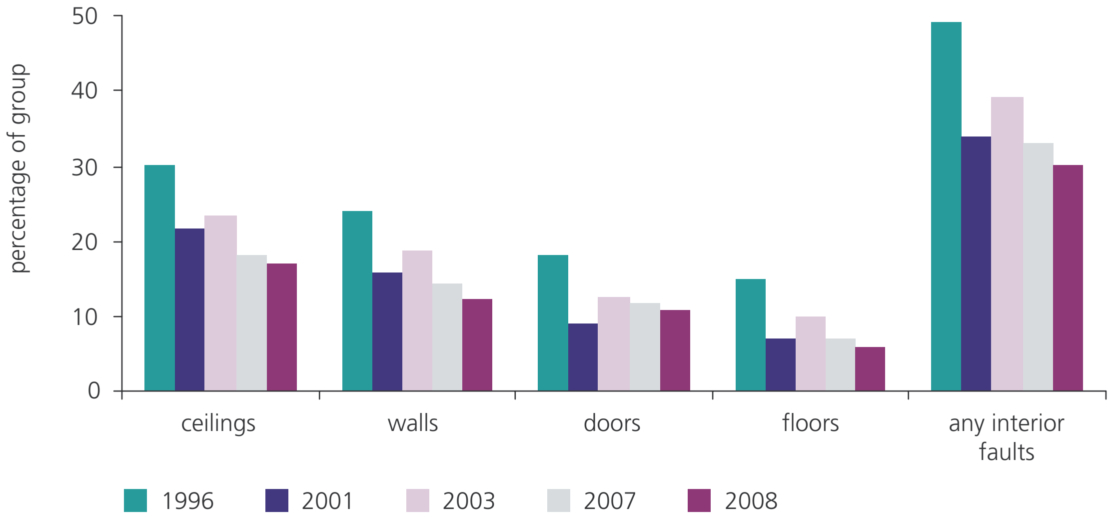
4.7 Looking specifically at flats, there was also a reduction in the incidence of faults in common areas from 24% in 1996 to 17% in 2008. Similarly faults in shared facilities fell from 48% in 1996 to 37% in 2008.

Figure 4.3: Percentage of dwellings with most common exterior faults, 1996–2008



Base: all dwellings
Notes:
1) percentages relate to all dwellings and not just to those with the particular element
2) underpinning data are presented in Annex Table 4.4
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

Figure 4.4: Percentage of dwellings with different types of interior faults, 1996–2008



Base: all dwellings
Notes:
1) percentages relate to all dwellings and not just to those with the particular element
2) underpinning data are presented in Annex Table 4.5
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

Costs of dealing with disrepair in 2008

4.8 This section examines the costs of dealing with all disrepair. For a more detailed breakdown of what proportion of costs are likely to be required for different types of work and how this varies by sector and dwelling characteristics see the 2007 EHCS Annual Report[13]. Although the data relates to 2007, the overall patterns are very unlikely to have changed significantly since then.

4.9 The cost of dealing with disrepair is examined in two ways: actual or 'required expenditure' and 'standardised costs'. '*Required expenditure*' incorporate regional and tenure factors and are not adjusted for dwelling floor area so will be higher for larger dwellings. An index of disrepair, referred to as '*standardised repair costs*' is used to compare dwellings of different sizes, in different tenures and areas on the same basis, Box 1.

Box 1: Repair cost measures

Required expenditure – total cost per dwelling in pounds that represents the best estimate of what the specified work would actually cost. These costs are influenced by regional variations in prices and assume different project sizes for work to houses in different tenures. In the owner occupied and private rented sector the contract size for work to houses is taken to be one. In the social rented sector, the contract size is taken as the number of dwellings on the estate unless the house is not on an estate and therefore assumed to be a street property with a contract size of one. For flats, the contract size for exterior works is the size of the block regardless of tenure. This measure assumes that all work is carried out by contractors who operate to health and safety regulations. The costs do not include any VAT or mark up for profit. These costs should not be used for assessing differences in condition between different tenures or dwelling types as they vary according to dwelling size, tenure and location.

Standardised repair costs – this is an index of disrepair, that expresses costs in pounds per square metre (£/m^2) based on prices for the East Midland region (where prices can be regarded as a mid point in the range of regional prices).

Under the standardised repair cost measure it is assumed that all work is undertaken by contractors on a block contract basis. For flats, the size of the contract is assumed to be the whole block and for all houses it is taken as a group of five dwellings, representing costs more closely associated with those which may be incurred by a landlord organising the work on a planned programme basis. By reducing costs to a £/m^2 basis the effect of building size on the amount of disrepair recorded is omitted, otherwise the extent of disrepair measured is substantially driven by the size of the building. Standardised repair costs should *not* be used as an indication of expenditure required to remedy problems.

[13] 2007 EHCS Annual Report, September 2009
http://www.communities.gov.uk/publications/corporate/statistics/ehcs2007annualreport

4.10 The survey also distinguishes between three different levels of repairs needed, Box 2. In the main, the chapter will focus on basic repair costs.

Box 2: Categories of repair measured in the survey

Urgent repairs	–	work which needs to be undertaken to tackle problems presenting a risk of health, safety, security or further significant deterioration in the short term, examples include leaking roofs, broken locks to external doors and cracked socket covers.
Basic repairs	–	any urgent repairs plus additional visible work to be carried out in the medium term.
Comprehensive repairs	–	the above two categories plus any replacements the surveyor has assessed as being needed in the next 10 years.

4.11 Table 4.3 shows the average and total estimated required expenditure to carry out different levels of repairs to the stock. This expenditure does not include the costs incurred through routine cyclical maintenance to dwellings. It is also likely that these costs underestimate the amount of money that is needed to be spent on shared facilities and common areas as there is insufficient robust data on the extent and type of shared facilities on the larger estates owned by social landlords.

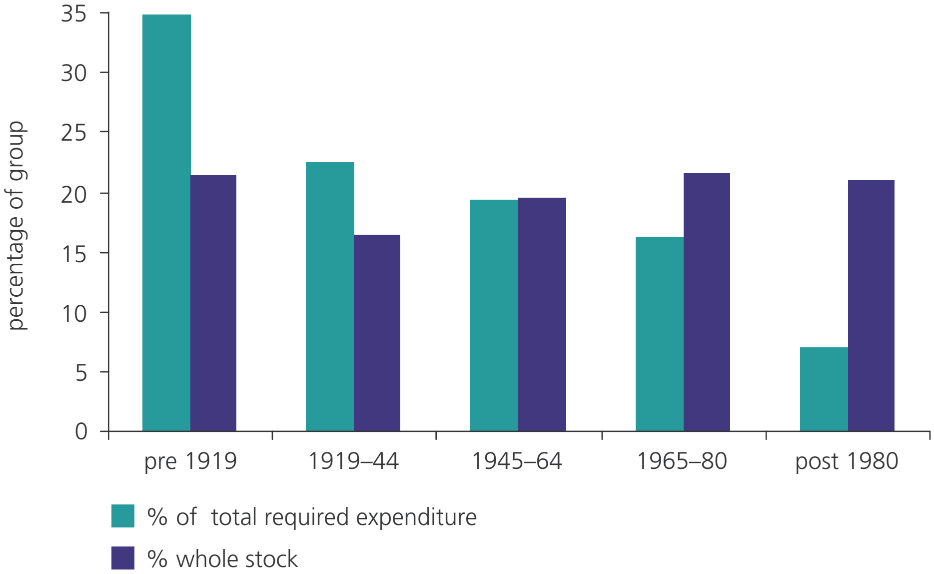
Table 4.3: Required expenditure to remedy disrepair, 2008

all dwellings

	mean expenditure per dwelling (£)	total expenditure (£ billion)
urgent repairs	1,079	24.0
basic repairs	1,687	37.5
comprehensive repairs	3,982	88.6

4.12 The bulk (89%) of the expenditure for comprehensive repairs was required to deal with disrepair in the private sector. The proportion of the total required for the private sector was very similar for urgent and basic repairs (86% and 88% respectively). The distribution of total expenditure required showed some notable variations among dwellings of different ages. Over a third (35%) of the total expenditure required for dealing with all types of repair was for dwellings built before 1919, Figure 4.5.

Figure 4.5: Proportion of total expenditure required for comprehensive repairs compared to the distribution of the whole stock by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 4.6
Source: English Housing Survey 2008, dwelling sample

4.13 The costs quoted above do not include any costs associated with work to fencing or boundary walls to private plots. The average cost of basic repairs required to these elements across the stock was £332 per dwelling. However these costs were higher for certain groups of stock, most notably dwellings built before 1919 where the average cost was roughly double this figure, Annex Table 4.1.

Types of dwellings most and least likely to be in disrepair

4.14 This analysis uses average standardised basic repair costs and also examines how the costs are distributed in four overall 'bands' that roughly equate to the four bands used in the comparisons of standardised repair costs over time using 2001 prices in the next section.

4.15 Standardised repair costs for basic repairs vary considerably by dwelling and area characteristics. Whilst the average cost per dwelling was £16/m^2, this was significantly higher for private rented dwellings (£29/m^2). Only 22% of dwellings in this tenure required no repairs and 24% required works costing in excess of £35/m^2 , Figure 4.6. The local authority sector had a similar proportion of dwellings with no repairs needed (21%) but a much lower proportion requiring works over £35/m^2 (15%). Owner occupied and housing association dwellings had the lowest average costs (£13/m^2 and £12/m^2) and costs were distributed in a very similar way across the bands.

Figure 4.6: Distribution of standardised basic repair costs by tenure, 2008

Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.4
Source: English Housing Survey 2008, dwelling sample

4.16 Dwelling age was also a significant factor. Not surprisingly the newest dwellings built after 1990 had the lowest average standardised basic costs (£3/m²) and only 1% required works in excess of £35/m². In contrast over a quarter (28%) of dwellings built before 1919 required works over £35/m², Figure 4.7.

Figure 4.7: Distribution of standardised basic repair costs by dwelling age, 2008

Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.4
Source: English Housing Survey 2008, dwelling sample

4.17 Much higher average costs were apparent for converted flats (£37/m²) – only 17% of these dwellings required no repairs and 31% needed works in excess of £35/m². In contrast, some 46% of detached houses and 44% of bungalows required no repairs.

4.18 Dwellings in city centres (£26/m²), in village centres and other rural areas (£25/m²), and in the most deprived 10% of areas (£22/m²) had higher average costs, see Summary Statistics Table SST5.5.

4.19 Average costs were also slightly higher in the most deprived 20% of areas at £20/m². About quarter (24%) of dwellings in the most deprived 20% of areas required no repairs compared with 43% in the least deprived 20% of areas. Conversely, only around 8% of dwellings in the least deprived 20% of areas needed repairs over £35/m² compared with 15% in the most deprived 20% of areas.

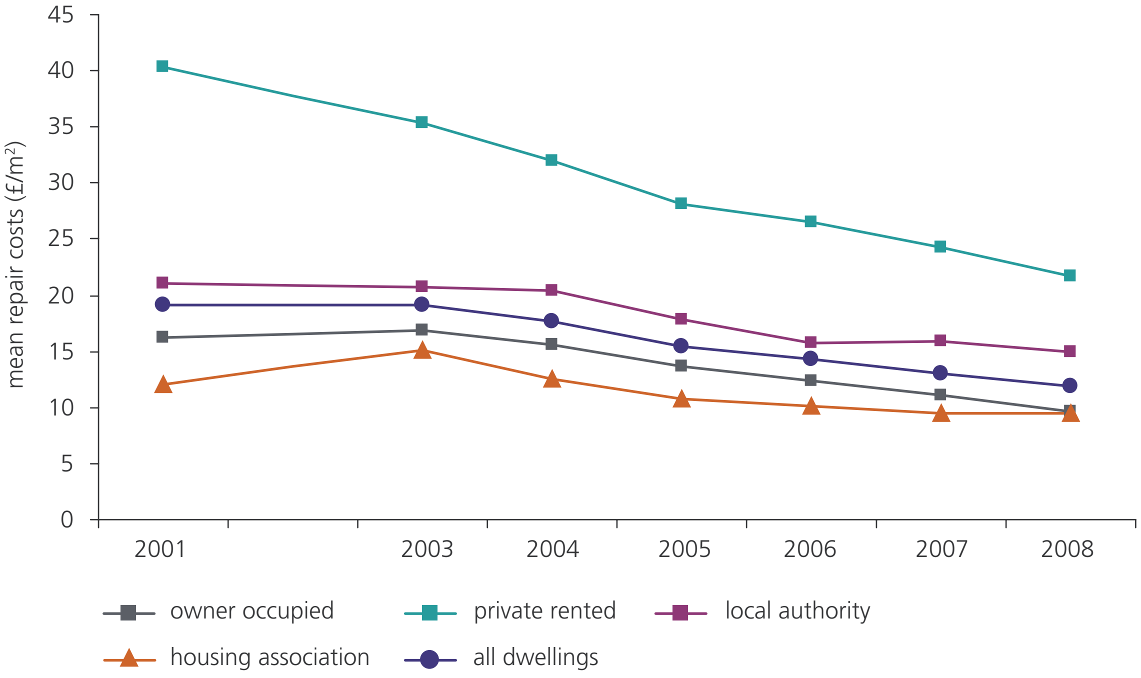
Change in disrepair over time from 2001–2008

4.20 To examine how the amount of disrepair in the stock has changed over time and which parts of the stock have seen the greatest and least improvement, this section uses the basic standardised costs (£/m^2) converted to 2001 prices using the Building Cost Information Service (BCIS) National Index. As some of the year on year change in the level of disrepair arises from random fluctuations related to sampling and measurement errors, the section focuses on overall changes and trends from 2001 onwards rather than annual differences.

4.21 Since 2001, the average basic repair cost has fallen by roughly 38% from £19/m² to £12/m² indicating a significant overall improvement in the way dwellings have been maintained on a day to day basis. The largest reductions were evident in the private rented sector where costs fell by 46% from £40/m² to £22/m². We need to bear in mind, however, that costs in this sector have always been significantly higher than those in other tenures. Although costs have fallen the least dramatically (by 22%) within the housing association sector, costs here have always been the lowest among the tenures. This is mainly because housing associations have a relatively higher proportion of new dwellings which normally require fewer repairs than older properties.

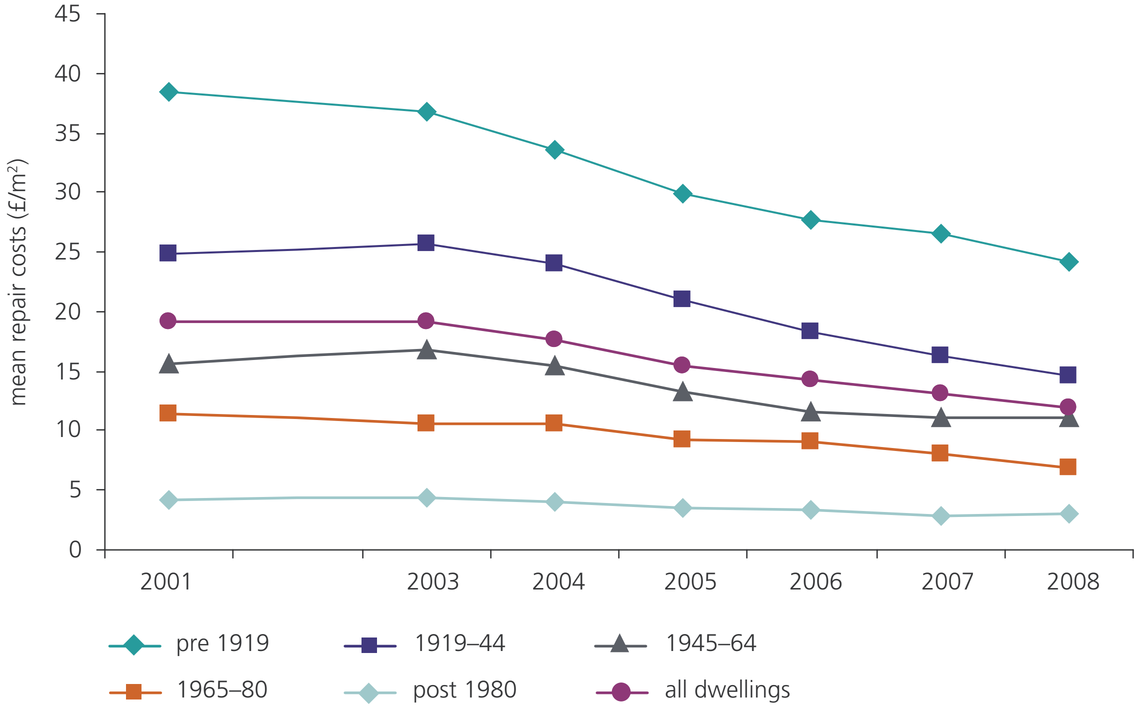
4.22 Dwellings built between 1919 and 1944 also saw a large improvement with average costs falling from £25/m² to £15/m². Although there has been improvement in the condition of the oldest pre 1919 dwellings (37% fall in cost) these older dwellings continue to have significantly higher repair costs than newer dwellings.

Figure 4.8: Mean basic standardised repair costs by tenure, 2001–2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 4.7
Source: English House Condition Survey 2001–2007, English Housing Survey 2008 dwelling sample

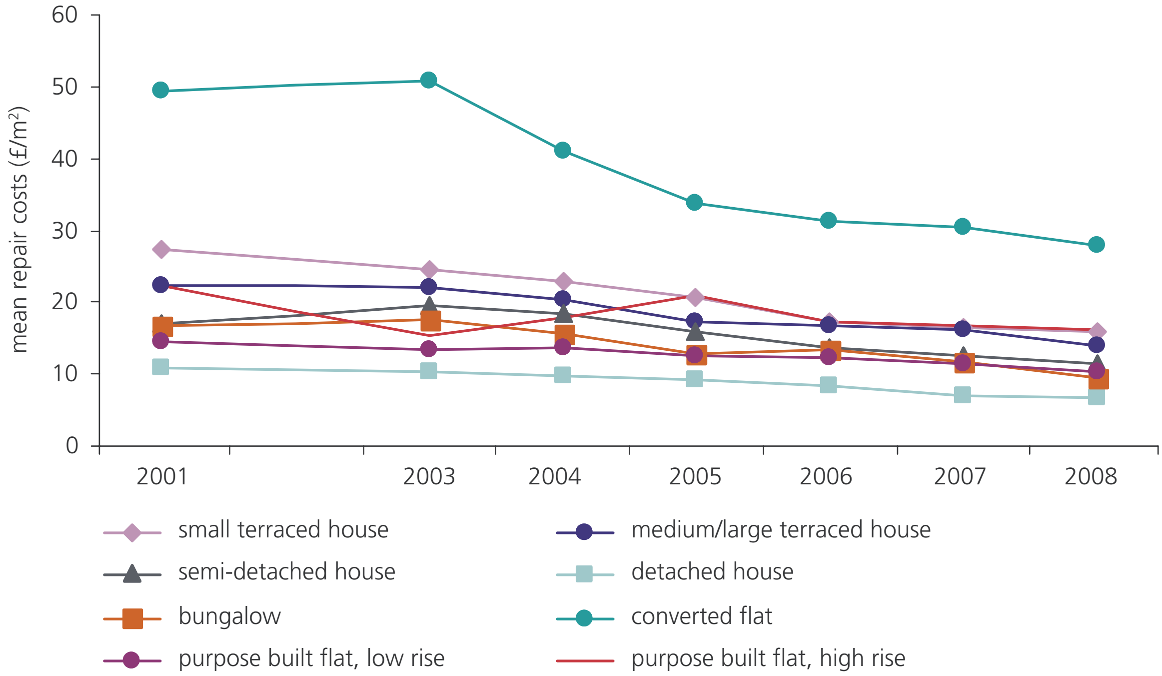
Figure 4.9: Mean basic standardised repair costs by dwelling age, 2001–2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 4.7
Source: English House Condition Survey 2001–2007, English Housing Survey 2008 dwelling sample

4.23 Bungalows and converted flats saw the highest proportionate falls in costs (43–44%) whilst purpose built flats saw the smallest reductions (around 28%), Figure 4.10. However, converted flats still had significantly higher levels of disrepair than other types of dwelling in 2008

Figure 4.10: Mean basic standardised repair costs by dwelling type, 2001–2008

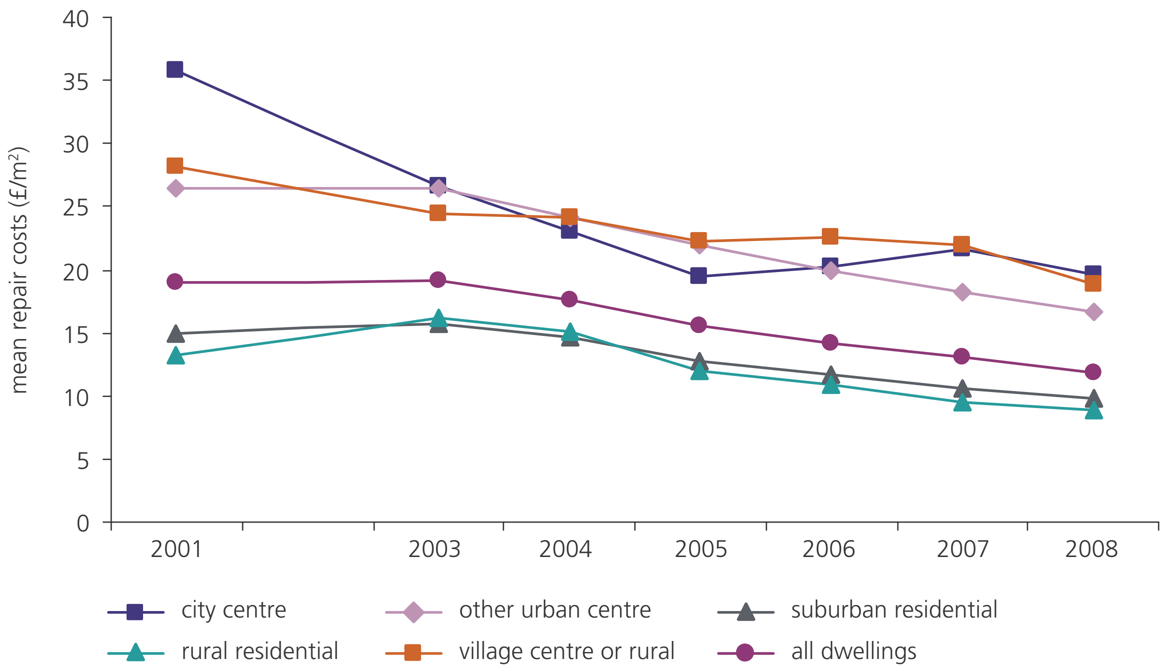


Base: all dwellings
Note: underpinning data are presented in Annex Table 4.7
Source: English House Condition Survey 2001–2007, English Housing Survey 2008 dwelling sample

4.24 The period 2001–2008 also saw greater convergence in average repair costs in the three regional areas of England. Costs in the south east had been slightly higher in 2001 but average costs in this region have fallen by 41% compared to 35% in the northern region and 38% in the rest of England.

4.25 There has been a smaller rate of improvement in disrepair in dwellings in suburban residential areas (34% reduction in costs) and, even more so, in all types of rural area (33% reduction) compared with city centres and other urban centres (45% and 37% reductions respectively), Figure 4.11.

Figure 4.11: Mean basic standardised repair costs by area, 2001–2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 4.7
Source: English House Condition Survey 2001–2007, English Housing Survey 2008 dwelling sample

Dampness

4.26 Untreated damp conditions and mould growth in the home can have a significant impact on both the occupants' health and the fabric of the dwelling. Damp conditions increase the risk of the development of respiratory problems. They can also lead to rapid deterioration of the dwelling, creating further problems and so add to the costs of repair. This section examines the prevalence of damp problems overall and the three main types:

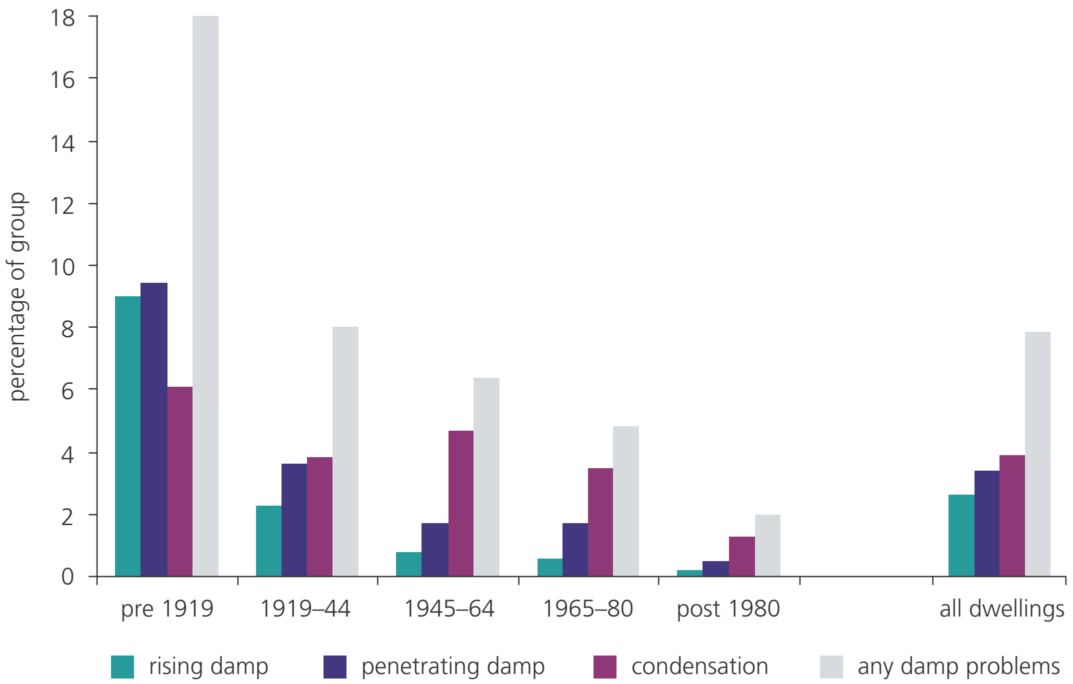
Rising damp – this is caused by water coming up from the ground into the walls and floors of the dwelling because the damp proof course and/or damp proof membranes are inadequate or defective. It also arises when the damp proof course is bridged – earth or paving is laid above the level of the damp proof course. Around 3% of dwellings (584,000) had a rising damp problem.

Penetrating damp – this is caused by water coming in from leaks to the external fabric of the dwelling (e.g. roofs, gutters) or from the internal plumbing. It is estimated that just over 3% of dwellings (759,000) had a penetrating damp problem.

Serious condensation and mould growth – this is caused by water vapour generated by daily activities like cooking or bathing condensing on cold surfaces such as windows and doors. As virtually all dwellings experience at least some condensation, only the most serious levels of condensation and mould growth are noted in the survey. Around 4% of dwellings (866,000) had problems of serious condensation and mould growth.

4.27 The incidence of damp problems overall and the three different types varied considerably for different groups of dwellings and households. Not surprisingly, dwelling age was strongly related to all types of damp problems – 18% of dwellings built before 1919 had some form of damp problem compared with just 2% of those built after 1980, Figure 4.12. These trends were much more marked for problems with rising and penetrating damp than for serious condensation and mould growth. In dwellings built after 1919 and especially those built after 1944, problems with serious condensation and mould were more common than problems with rising and penetrating damp. However, the reverse was true for pre 1919 dwellings.

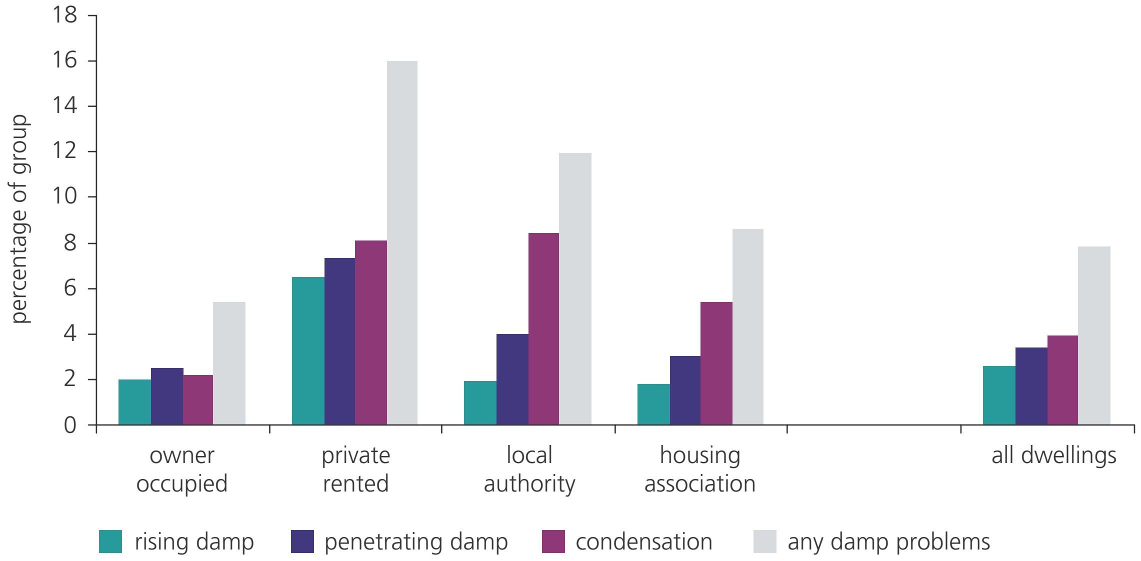
Figure 4.12: Proportion of dwellings with damp problems by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.1
Source: English Housing Survey 2008, dwelling sample

4.28 Around 5% of owner occupied dwellings experienced damp problems compared with 9% of housing association dwellings, 12% of local authority dwellings and 16% of private rented dwellings, Figure 4.13. Private rented dwellings had a much higher incidence of rising and penetrating damp. Private rented dwellings and local authority dwellings were the most likely to have a serious condensation problem (8%).

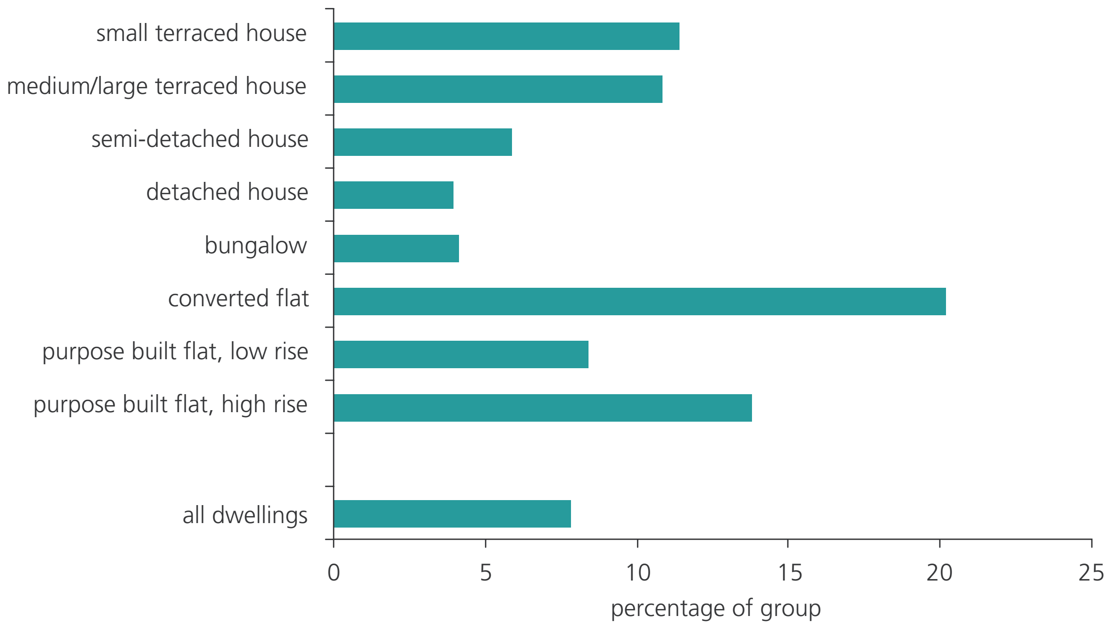
Figure 4.13: Proportion of dwellings with damp problems by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.1
Source: English Housing Survey, 2008 dwelling sample

4.29 Damp problems were also more prevalent in converted flats (20%) and purpose built high rise flats (14%). In contrast, just 4% of bungalows and detached houses had such problems Figure 4.14.

Figure 4.14: Proportion of dwellings with any damp problem by dwelling type, 2008



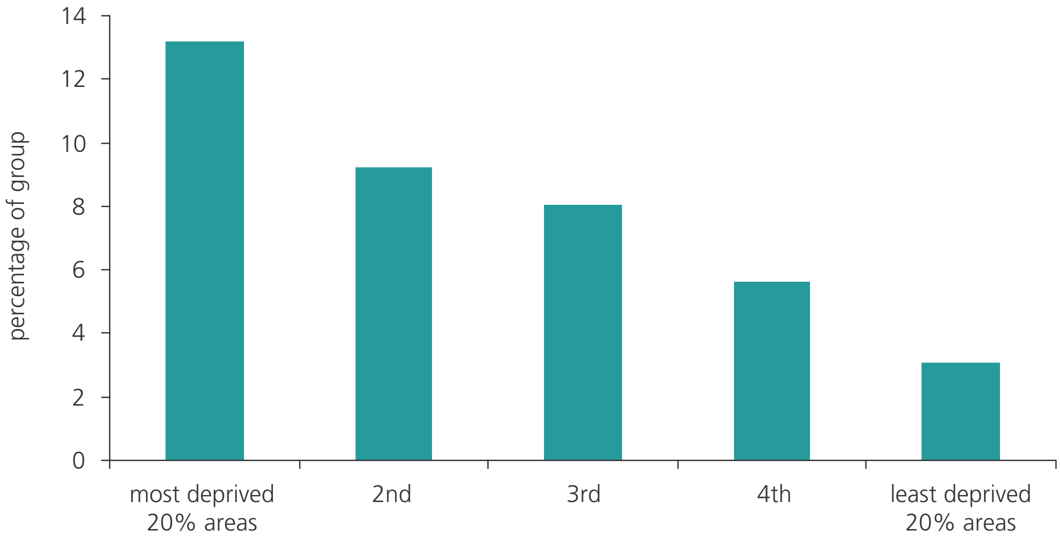
Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.1
Source: English Housing Survey 2008, dwelling sample

4.30 Not surprisingly purpose built flats were very unlikely to have rising damp problems but 7% of high rise flats had penetrating damp and 10% had a serious condensation and mould growth problem. Terraced houses were more likely to be affected by rising or penetrating damp than bungalows or detached houses (5% compared with 1–2%).

4.31 Vacant dwellings also had a relatively higher incidence of rising or penetrating damp (7%). There was also a link between dwelling size and serious condensation or mould with 6% of the smallest dwellings (less than $50m^2$) having condensation compared to 2% of the largest dwellings (at least $110m^2$).

4.32 Damp problems were less common for dwellings in suburban or rural residential areas (5–6%) and most common for those in city centres (15%). Damp problems were also linked to area deprivation – one in seven (13% of) dwellings in the most deprived 20% of areas had damp problem compared with just 3% of those in the least deprived 20% of areas, Figure 4.15.

Figure 4.15: Proportion of dwellings with any damp problems by level of local area deprivation, 2008



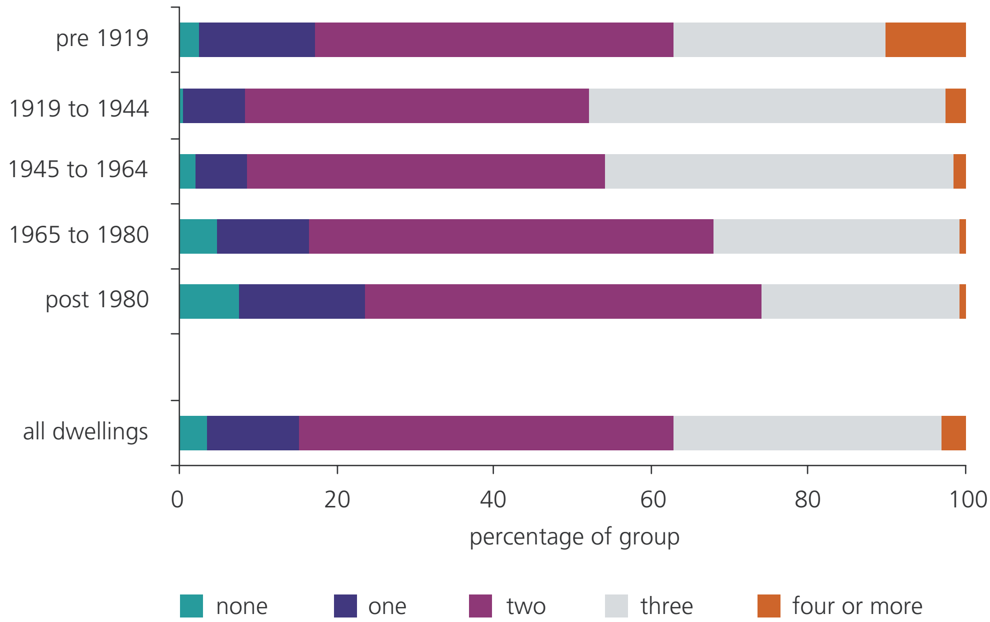
Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.2
Source: English Housing Survey 2008, dwelling sample

4.33 Bathrooms are one of the rooms most likely to experience problems with damp, especially serious condensation and mould growth. The more external surfaces[14] a bathroom has, the harder it is to keep the bathroom warm and the greater the risk of condensation occurring. The vast majority (96%) of dwellings had a bathroom with at least one external wall which will normally contain a window. The majority (74%) of dwellings with internal bathrooms (no external surfaces) were purpose built flats. These 'internal bathrooms' can also be particularly prone to serious condensation if the fan is inadequate or simply not working.

[14] External surfaces are walls, roofs or floors that are exposed to the outside air or attached to unheated outbuildings

4.34 Private rented dwellings were twice as likely to have bathrooms with four or more external surfaces as those in other tenures (6% compared with 2–3%). Dwellings built before 1919 were also more likely to have a bathroom with 4 or more external surfaces. Some 10% of this group had such a bathroom compared to less than 1% of dwellings built after 1980, Figure 4.16. Dwellings built after 1980 were the most likely to have internal bathrooms.

Figure 4.16: Number of external surfaces in bathroom or shower room by dwelling age, 2008

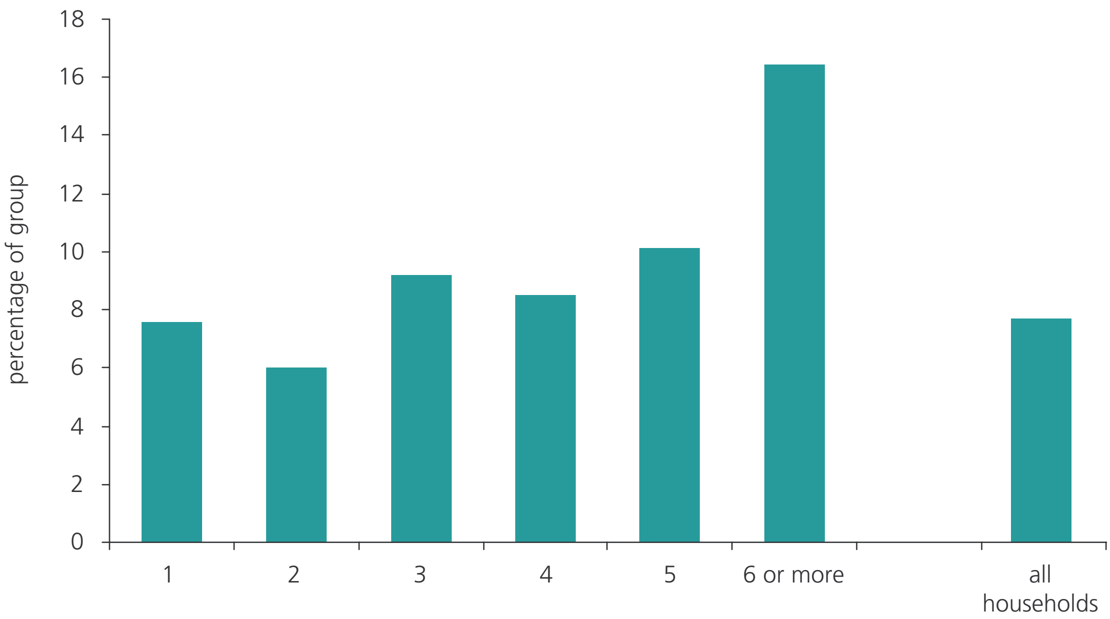


Base: all dwellings
Note: underpinning data are presented in Annex Table 4.12
Source: English Housing Survey 2008, dwelling sample

4.35 Extractor fans in kitchens and bathrooms can help to improve the air quality in these rooms and reduce the likelihood of condensation and mould growth. Around 45% of dwellings had an extractor fan in the kitchen and 40% had one in the bathroom. However, some 4% of these kitchen fans and 7% of bathroom fans were not working at the time of survey.

4.36 Overall around 8% of households lived in a home that had some damp problems, although this doubled to 16% for households containing 6 or more people, Figure 4.17. This link between the presence of damp and household size is most striking for serious condensation and mould growth. This is simply because more people will generate more water vapour because they will have more baths/showers and do more washing and cooking etc.

Figure 4.17: Proportion of households with any damp problem by household size, 2008



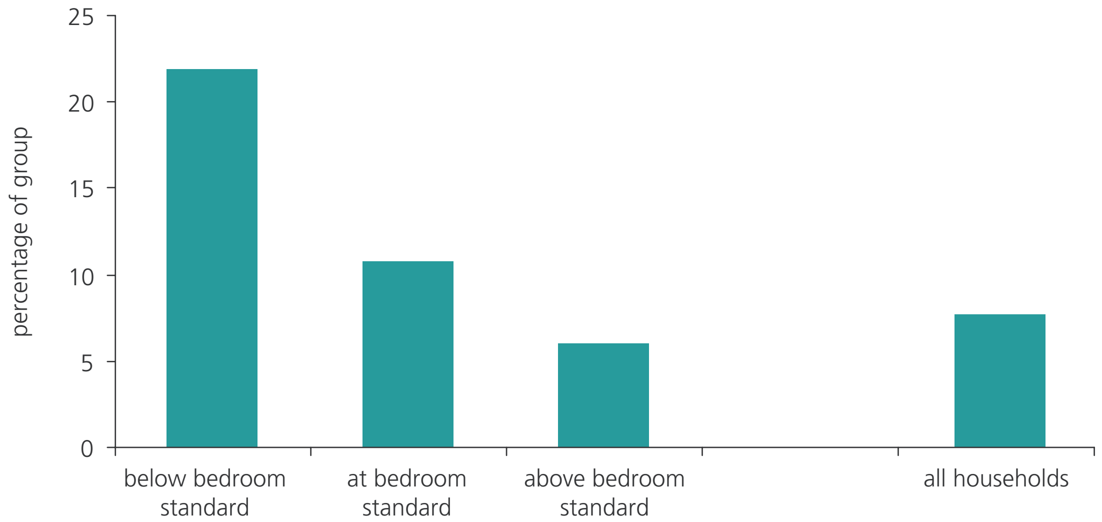
Base: all households
Note: underpinning data are presented in Annex Table 4.8
Source: English Housing Survey 2008, household sub-sample

4.37 Overcrowding significantly increases the risk of condensation and mould growth within the home. Households that lacked one or more bedrooms according to the bedroom standard were far more likely to live in a dwelling with a serious condensation problem than those with additional bedrooms according to this standard (17% compared with 3%).

4.38 The link between the incidence of serious condensation and overcrowding largely explains the link between overcrowding and the incidence of any damp problem in the home. About a quarter (22%) of households who lacked bedrooms using the bedroom standard had a problem with damp compared with just 6% of those with additional bedrooms according to this standard, Figure 4.18.

4.39 Multi person households were the most likely to have a damp problem in their home (14%) as were single parent households and households living in poverty (12%) and single person households under 60 years of age (10%). Conversely couples with no dependent children were the least likely to have a damp problem (4%) as were single person households aged over 60 years of age (6%).

Figure 4.18: Proportion of households with any damp problem by bedroom standard, 2008



Base: all households
Note: underpinning data are presented in Annex Table 4.9
Source: English Housing Survey 2008, household sub-sample

Ventilation

4.40 The EHS assesses whether there are any defects to natural or appliance ventilation in each of the main rooms surveyed. Poor natural ventilation can contribute to problems of overheating or damp and mould growth. Appliances that burn gas, oil or solid fuel need to have adequate ventilation in order to prevent the build-up of uncombusted fuel gas and combustion products like carbon monoxide and sulphur dioxide in the dwelling.

4.41 Around 67,000 (less than 1%) dwellings had defects to appliance ventilation. In the vast majority of these cases this defect was present in one room only; most commonly the living room or kitchen.

4.42 Some 373,000 (2% of) dwellings had defective natural ventilation in one or more rooms inside the dwelling. Of those dwellings with such defects, over three quarters (78%) had the problem in just one room.

Electrical wiring

4.43 Older forms of electrical wiring in dwellings were not designed to power the growing number of household electrical appliances. In the most serious cases, older or inadequate electrical wiring increases the risk of both electrocution and fire. This section examines the incidence of older types of wiring, earthing wires, consumer unit arrangements (fuse boxes), protection for excess electrical current and circuit breakers for personal protection (see Boxes 3 and 4).

4.44 The vast majority of the stock (98%) had the modern PVC sheathed wiring and around nine tenths (91%) had modern earthing wires. The stock performed less well in relation to other electrical safety measures. Around 40% of dwellings were without modern fuse box arrangements and circuit breakers (RCDs) and roughly 30% of dwellings lacked modern arrangements to protect against electrical circuit overload, Table 4.4.

Table 4.4: Dwellings with different forms of electrical safety measures, 2008

all dwellings

	feature	percentage of dwellings	number of dwellings (000s)
type of wiring	lead or rubber covering	0.5	117
	PVC sheathed	98.3	21,869
	mixture	0.6	128
earthing wires	unsheathed or green cover	4.9	1,086
	yellow and green sheath	90.6	20,156
	mixture	1.6	349
consumer unit arrangment	separate fuse boxes for each circuit	2.1	472
	one or two covered boxes	37.9	8,424
	one or two accessible boxes	58.3	12,958
	mixture	1.0	226
overload protection	wire fuses	19.4	4,309
	cartridge fuses	8.3	1,837
	MCBs (miniture circuit breakers)	69.2	15,383
	mixture	2.3	517
personal protection	No RCDs (residual current devices)	39.5	8,787
	RCD in consumer unit	53.6	11,930
	separate RCDs	5.3	1,187
	mixture	0.6	127

Base: all dwellings
Source: English Housing Survey 2008, dwelling sample

4.45 The prevalence of features varied for different groups of dwellings and households.

Box 3: Wiring and fuse boxes

Wiring-

This is the cabling from the input electrical supply point, which runs through the meters and consumer units (fuse boxes) and leads out into the dwelling. The earliest types of wiring used lead or black rubber sheathings to enclose the wires. The danger with this type of cable is the degrading of the rubber: any failure of the insulation can cause the outer covering to become live. Modern wiring is PVC sheathed.

rubber covered wiring

PVC sheathed

Earthing-

These are the wires joining the components at the electrical distribution centre. The early forms of earthing wires were unsheathed then later covered with green rubber, then green plastic. In 1977 the colour convention changed and all wires had to be coloured green and yellow.

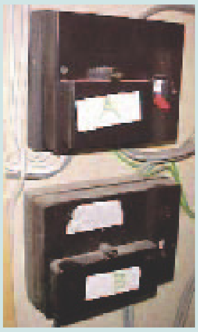
unsheathed or green covered earthing wire

yellow and green sheathed earthing wire

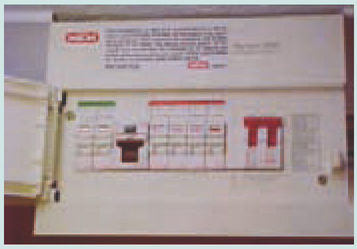
Consumer Unit Arrangement (fuse boxes)-

In older systems, each individual electrical circuit was fed through an individual switch and fuse box. Later in the 1960s through to the 1980s, the fuses were collected together into a small number of smaller boxes, normally with a switch on the front which controlled all the circuits leading to the box. These boxes were normally fitted with a cover, and the fuses hidden inside were accessed by the removal of the cover (often attached by a single screw). From the early 1980s, the newly named consumer unit (some dwellings have two) catered for the whole dwelling. The cover is normally transparent and easily accessible. Modern consumer units are also designed to accommodate modern safety measures namely circuit breakers and residual current devices.

separate fuse box for each circuit



one or two covered boxes

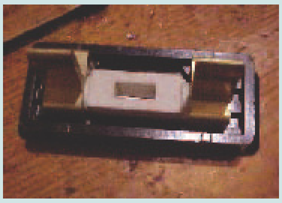


'accessible' box with MCB and RCD

Box 4: Additional electrical safety features

Overload Protection-

Miniature circuit breakers (MCBs) provide the most modern form of electrical current overload protection. These have replaced cartridge fuses and the original wire fuses (these simply melt when overheated) which formed the earliest form of protection.



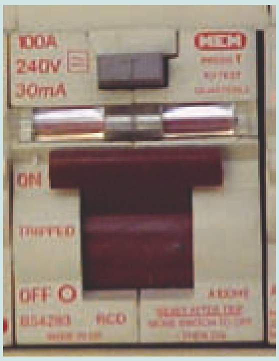
wire fuse for overload protection

cartridge fuse

miniature circuit breakers

Personal Protection-

Residual current devices (RCDs) are designed to break an electrical current very easily by detecting any abnormality in the circuit, for example, through someone touching a live wire. They are normally located in the consumer unit but a separate RCD may exist to protect an additional circuit, for example, an electrical circuit used in the garden.



residual current device (RCD)

separate RCD

Type of wiring and earthing

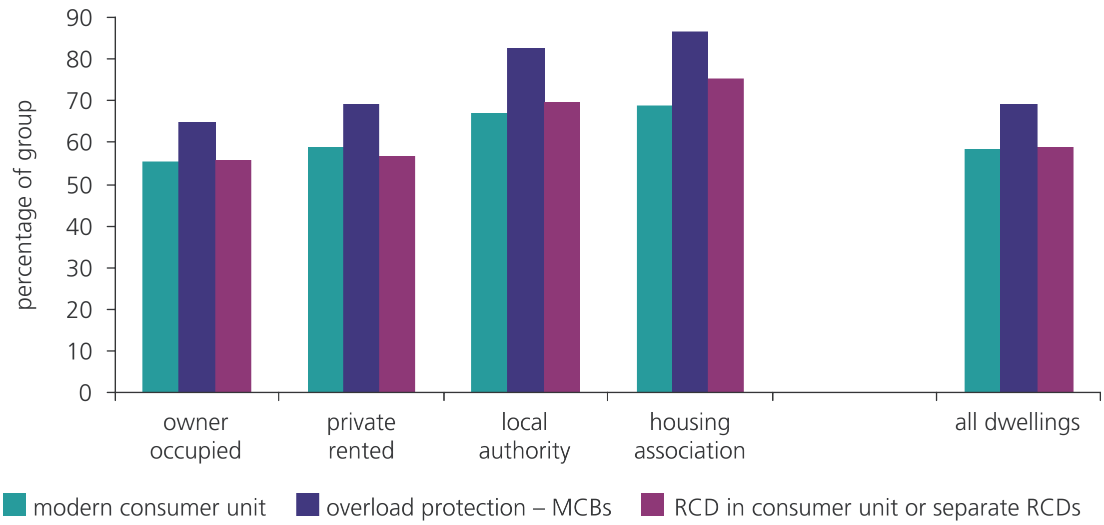
4.46 Some 245 thousand dwellings had at least some of the old lead or rubber covered wiring. The majority of these (94%) were in the private sector. Some 44% of households living in dwellings with these types of wiring were single people or couples aged 60 or over and 14% of them were families with dependent children.

4.47 Around 1,434 thousand (7% of) dwellings had some of the older type of earthing wires. Private sector dwellings were more likely to have these older types of earthing than those in the social sector – 8% of owner occupied and 6% of private rented dwellings had this type compared with 1% of dwellings owned by housing associations and 3% by local authorities. Interestingly these older forms of earthing were most prevalent in dwellings built between 1965 and 1980 being present in 10% of dwellings built during this period. Single people and couples aged 60 or over were also more likely to live in dwellings with older types of earthing (9%) compared with 7% of all households.

Consumer Unit Arrangement (fuse boxes), Overload Protection and Personal Protection

4.48 Owner occupied and private rented dwellings were less likely to have the most modern form of consumer units (56% and 59% respectively) than dwellings owned by local authorities (67%) or housing associations (69%). This is, however, an area where the private rented sector outperformed the owner occupied sector; probably because of legislation which places obligations on landlords to ensure that electrical installations are safe. Social sector dwellings were also more likely to have MCBs and RCDs than those in the private sector, Figure 4.19.

Figure 4.19: Modern consumer units and electrical protection measures by tenure, 2008

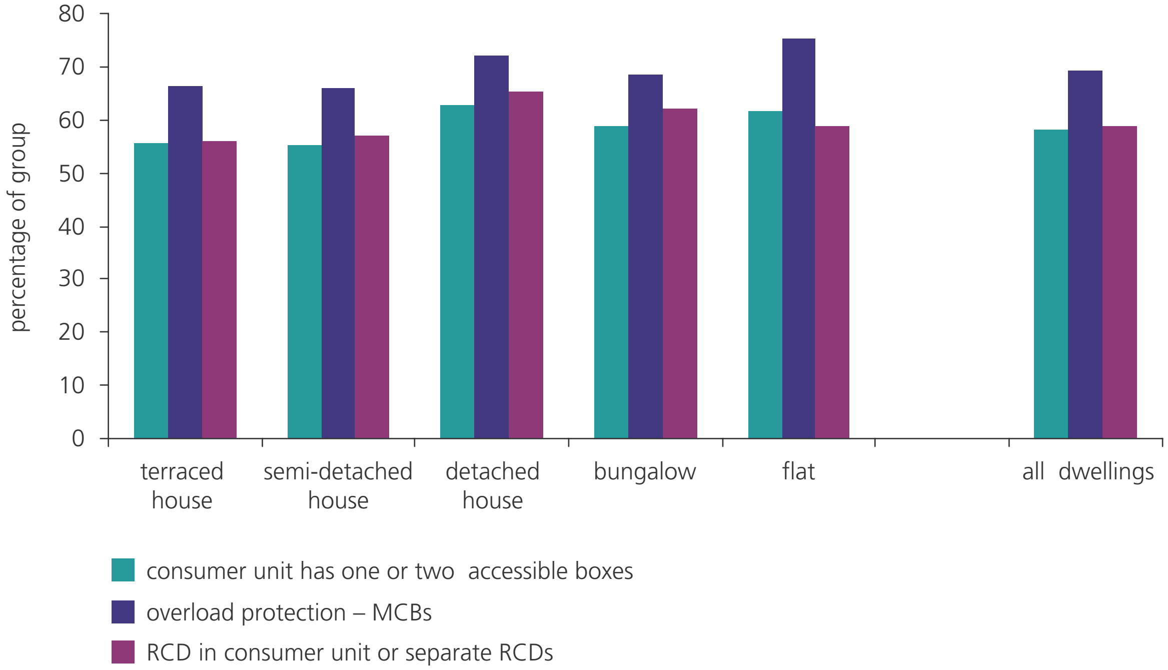


Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.4
Source: English Housing Survey 2008, dwelling sample

4.49 Dwellings built after 1980 and between 1945 and 1964 were more likely to have these modern features than those of other ages, particularly those built before 1919 and those built from 1965–80.

4.50 Dwellings in the most deprived areas performed as well, or slightly better, than those in less deprived areas with regard to these modern safety measures. Detached houses and flats in general were also more likely to have modern consumer units or additional protection measures than other types; especially terraced and semi detached houses, Figure 4.20.

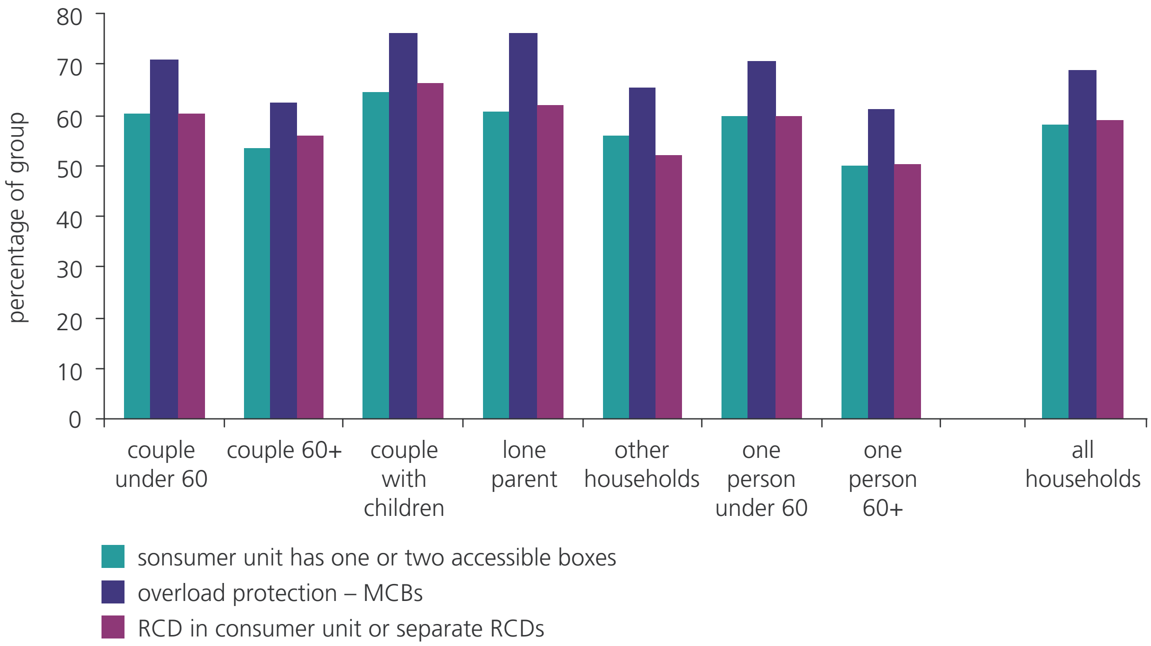
Figure 4.20: Modern consumer units and electrical protection measures by dwelling type, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.4
Source: English Housing Survey 2008, dwelling sample

4.51 In general, couples and single people aged 60 or older were less likely to have modern consumer units and electrical protection measures than younger households; especially those with dependent children, Figure 4.21.

Figure 4.21: Modern consumer units and electrical protection measures by household composition, 2008



Base: all households
Note: underpinning data are presented in Annex Table 4.10
Source: English Housing Survey 2008, household sub-sample

Health and safety

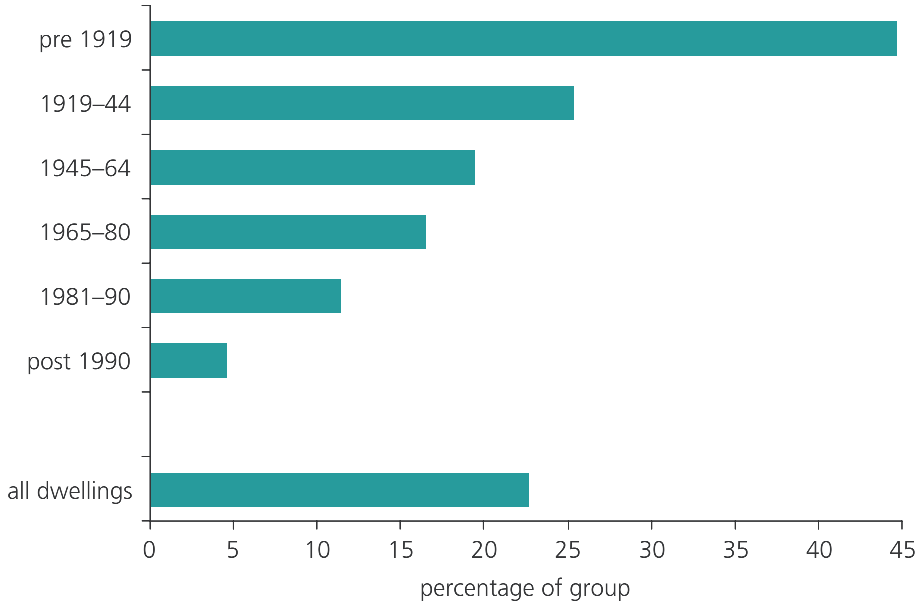
4.52 In April 2006 the Housing Health and Safety Rating System (HHSRS) replaced the dwelling Fitness Standard as the statutory minimum standard for housing. The HHSRS is a risk-based assessment that identifies hazards in dwellings and evaluates their potential effects on the health and safety of occupants and visitors. The EHS assesses 26 hazards which account for the vast majority of HHSRS hazards assessed by local authorities. This section looks at the most serious 'Category 1' hazards and how their incidence varies in the stock.

4.53 Just over 5 million[15] or 23% of all dwellings had one or more Category 1 hazards in 2008. The proportion of dwellings with Category 1 hazards varied considerably by tenure, dwelling age, dwelling type and location. Nearly a third (31%) of private rented dwellings had one or more Category 1 hazards compared to 23% of owner occupied dwellings, 16% of local authority dwellings and 13% of housing association dwellings.

[15] This is the number with one or more of the 26 hazards covered in the EHS. The 2008–09 Headline Report figure of 4.8 million was based (as with previous EHCS findings) only on 15 hazards. Consequently previously published estimates of the HHSRS are not directly comparable with those reported here.

4.54 There was a strong correlation between dwelling age and the prevalence of any Category 1 hazard. Approaching half (45%) of dwellings built before 1919 had one or more Category 1 hazards compared with just 5% of those built after 1990, Figure 4.22. This is mainly due to differences in the size, construction methods and built form of dwellings of different ages rather than higher levels of disrepair in older dwellings. For example, the majority of dwellings built before 1919 have solid 9" brick walls which make them more difficult to keep warm and many were built with steep or winding staircases. Standards and Building Regulations have continually set higher levels for these and other aspects of building performance which have improved many aspects of housing over time.

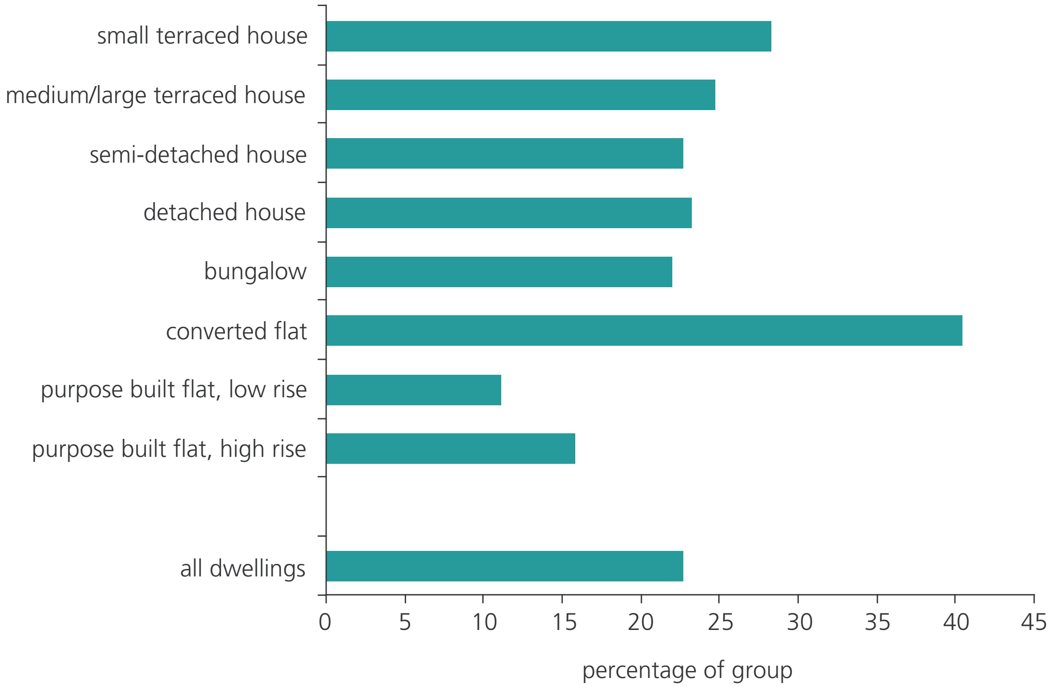
Figure 4.22: Percentage of dwellings with any Category 1 hazards by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST4.1
Source: English Housing Survey 2008, dwelling sample

4.55 Converted flats were far more likely to have Category 1 hazards than all other dwelling types; especially when compared to purpose built flats. Some 41% of converted flats had one or more Category 1 hazards compared with 12% of purpose-built flats, Figure 4.23.

Figure 4.23: Percentage of dwellings with any Category 1 hazards by dwelling type, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST5.4
Source: English Housing Survey 2008, dwelling sample

4.56 EHS data cannot be used to report on the incidence of all hazards individually, especially the less common ones, because the sample sizes are too small to produce robust estimates. Hazards have therefore been grouped into three categories for this analysis:

- Excess cold
- Falls (relating to falls on stairs, falls on the level, falls between levels and falls associated with baths)
- All other hazards measured or modelled by the survey

4.57 The most common types of Category 1 hazards were related to falls, affecting 1 in 8 (13% of) dwellings, followed by excess cold, Table 4.5.

Table 4.5: Dwellings with different types of Category 1 hazards, 2008

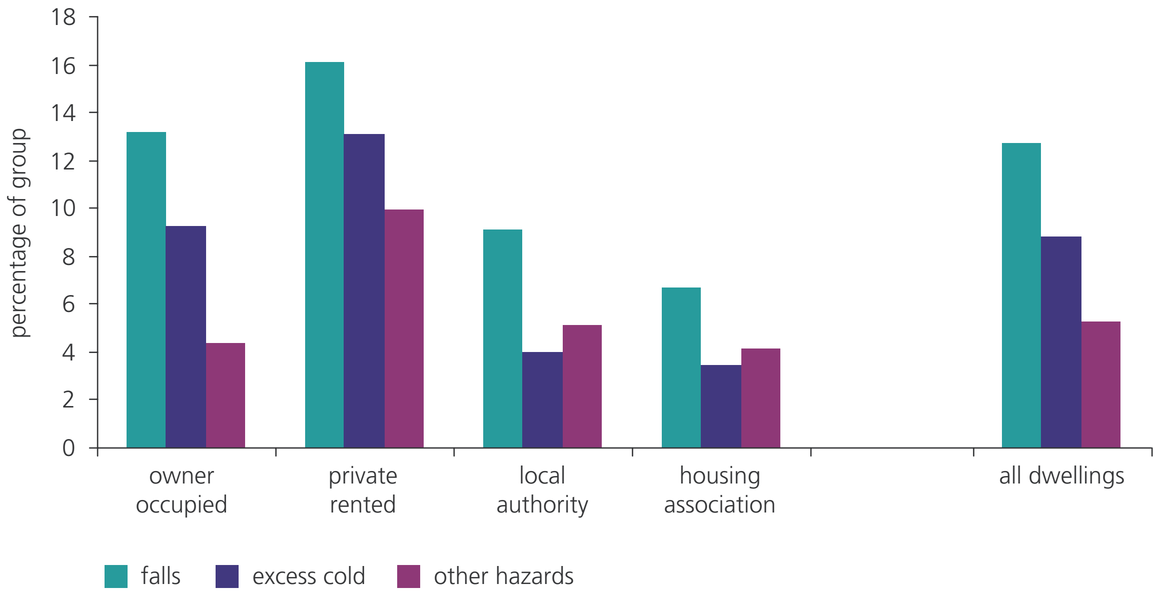
all dwellings

	percentage of dwellings	**number of dwellings (000s)**
excess cold	8.8	1,966
falls	12.7	2,825
other hazards	5.2	1,165
one or more Category 1 hazards	22.7	5,039

Base: all dwellings
Source: English Housing Survey 2008, dwelling sample

4.58 Dwellings in the social sector were less likely to have most types of hazards; especially excess cold. The most common Category 1 hazard within the private sector was risk from falls: 16% of dwellings in the private rented sector and 13% of owner occupied dwellings had Category 1 fall hazards, Figure 4.24.

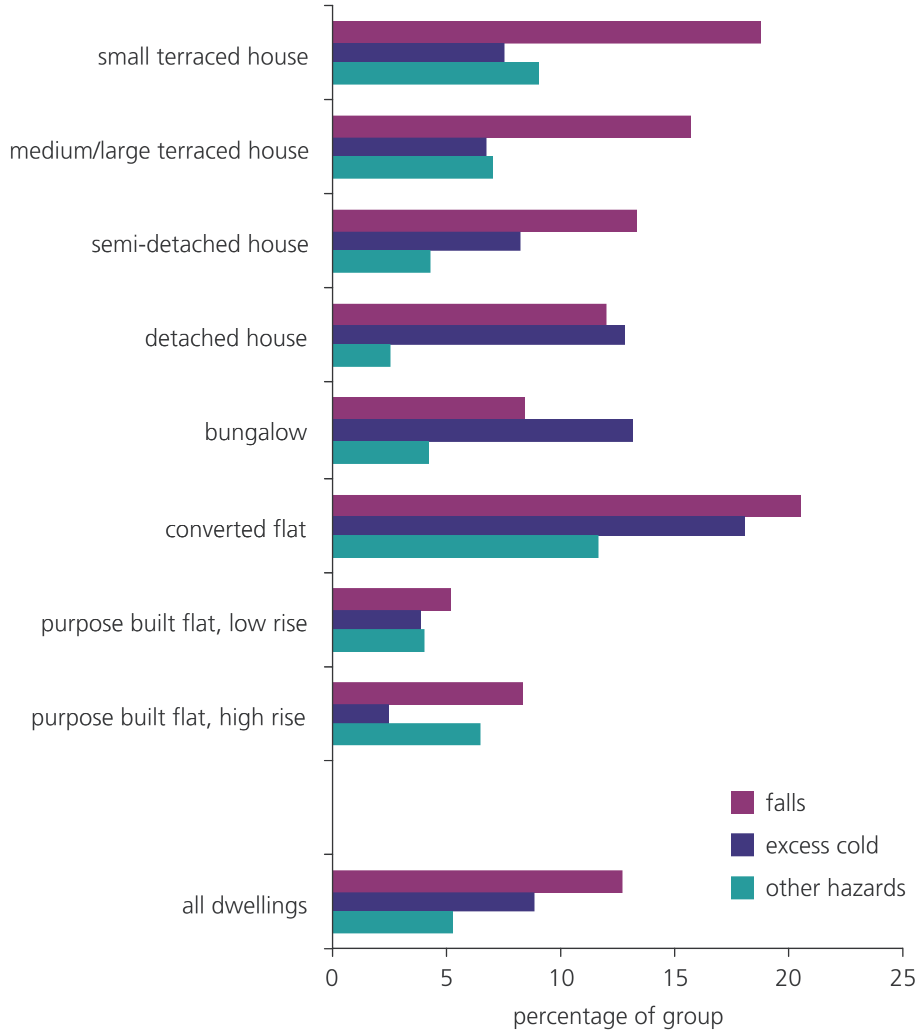
Figure 4.24: Percentage of dwellings with different types of Category 1 hazard by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST4.1
Source: English Housing Survey 2008, dwelling sample

4.59 Although Category 1 falls hazards were more common than excess cold hazards in the stock as a whole, this trend was reversed for bungalows and detached houses, Figure 4.25. This is mainly because these dwellings have a far greater surface area from which heat can be lost making them more expensive to heat unless they are well insulated or built using materials with low heat loss characteristics. In contrast, terraced houses (especially small ones) were more than twice as likely to have Category 1 hazards relating to falls than to excess cold. Interestingly bungalows, often preferred by older households, did not perform as well as low rise purpose built flats in relation to falls with 8% of these dwellings having Category 1 risk for this type of hazard.

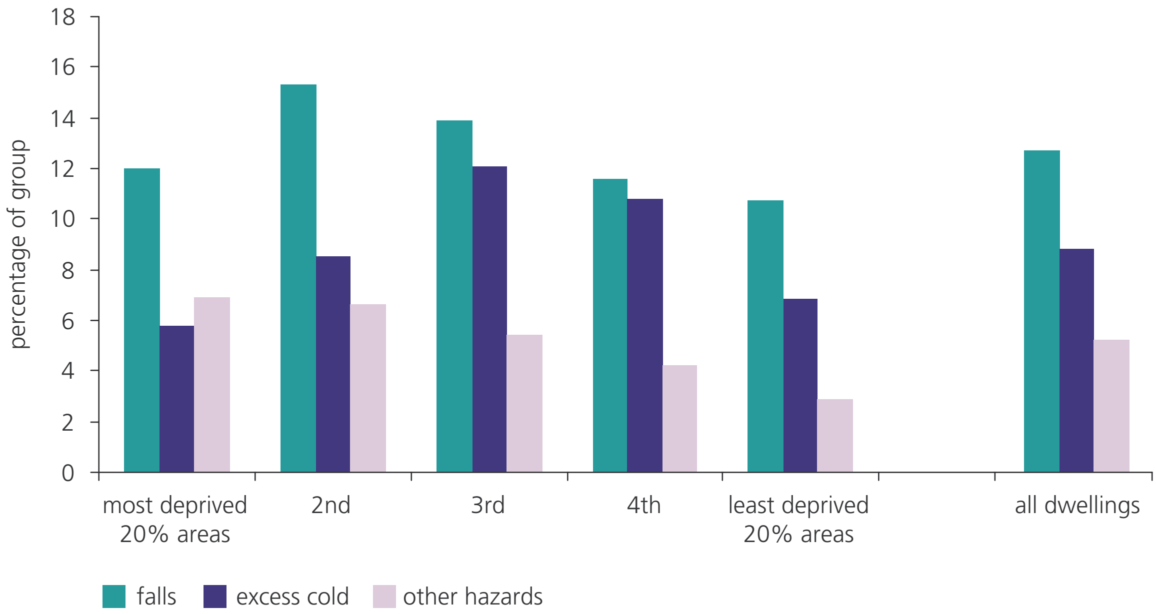
Figure 4.25: Percentage of dwellings with different types of Category 1 hazard by dwelling type, 2008



Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST4.1
Source: English Housing Survey 2008, dwelling sample

4.60 The types of hazards present varied with area deprivation but not in any systematic way. Although dwellings in the most deprived 20% of areas were much more likely to have falls hazards than those due to excess cold, the same is true for dwellings in the 2nd quintile and in the least deprived areas, Figure 4.26. Dwellings in the most deprived 20% of areas were slightly less likely to have a Category 1 hazard due to excess cold (6%) than other less deprived areas, Figure 4.26. This is largely because a much higher proportion of dwellings in the most deprived areas are social rented and it has already been demonstrated that this sector has a significantly lower proportion of dwellings with Category 1 excess cold hazards than the private sector.

Figure 4.26: Percentage of dwellings with different types of Category 1 hazard by local area deprivation, 2008



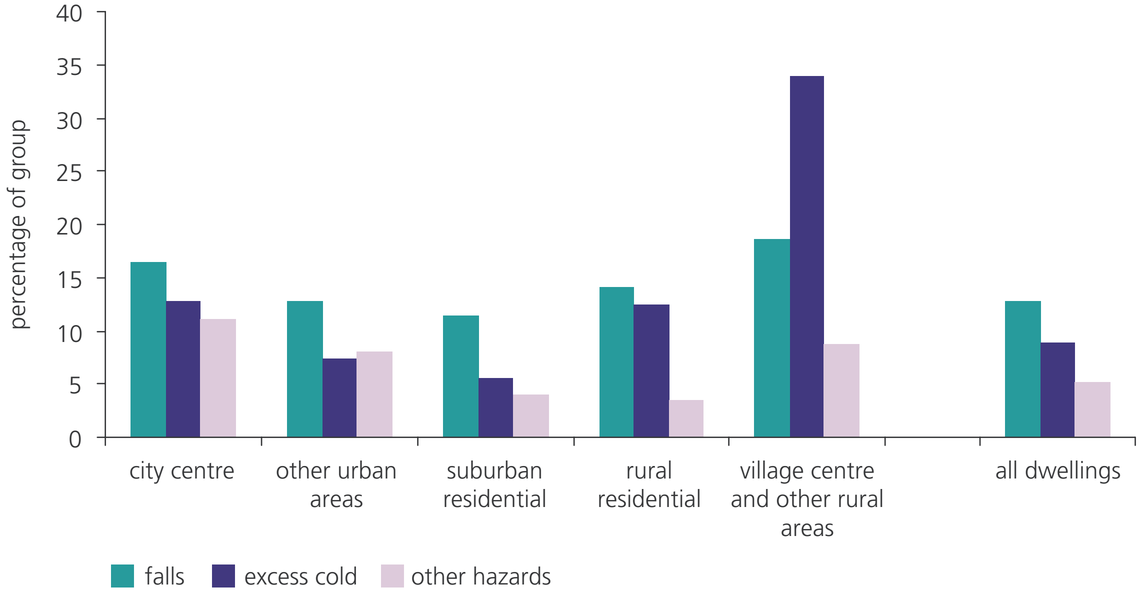
Base: all dwellings
Note: underpinning data are presented in Summary Statistics Table SST4.2
Source: English Housing Survey 2008, dwelling sample

4.61 The most common types of hazard varied considerably by the type of area. In village centres and other rural areas, hazards were dominated by excess cold with around one third (34%) of these dwellings having Category 1 excess cold hazard compared to 7% of dwellings in other urban centres and 5% in suburban residential areas, Figure 4.27. Excess cold hazards were almost twice as common as falls hazards for properties in these village centre and isolated rural locations. The reverse was true for suburban areas where falls hazards were twice as common as excess cold hazards.

4.62 In terms of the three regions, notable variations arose in relation to falls and excess cold. Dwellings in the rest of England were more likely to have Category 1 excess cold hazards (11%) than dwellings in northern regions and the south east regions (7% and 8% respectively). In contrast dwellings in northern regions and the rest of England were more likely to have Category 1 fall hazards (14% and 13% respectively) compared to the south east regions (10%).

4.63 Vacant dwellings were more likely to have all types of Category 1 hazards. Around 16% of this stock had Category 1 falls hazards and 15% of the stock had Category 1 excess cold hazards.

Figure 4.27: Percentage of dwellings with different types of Category 1 hazard by type of area, 2008

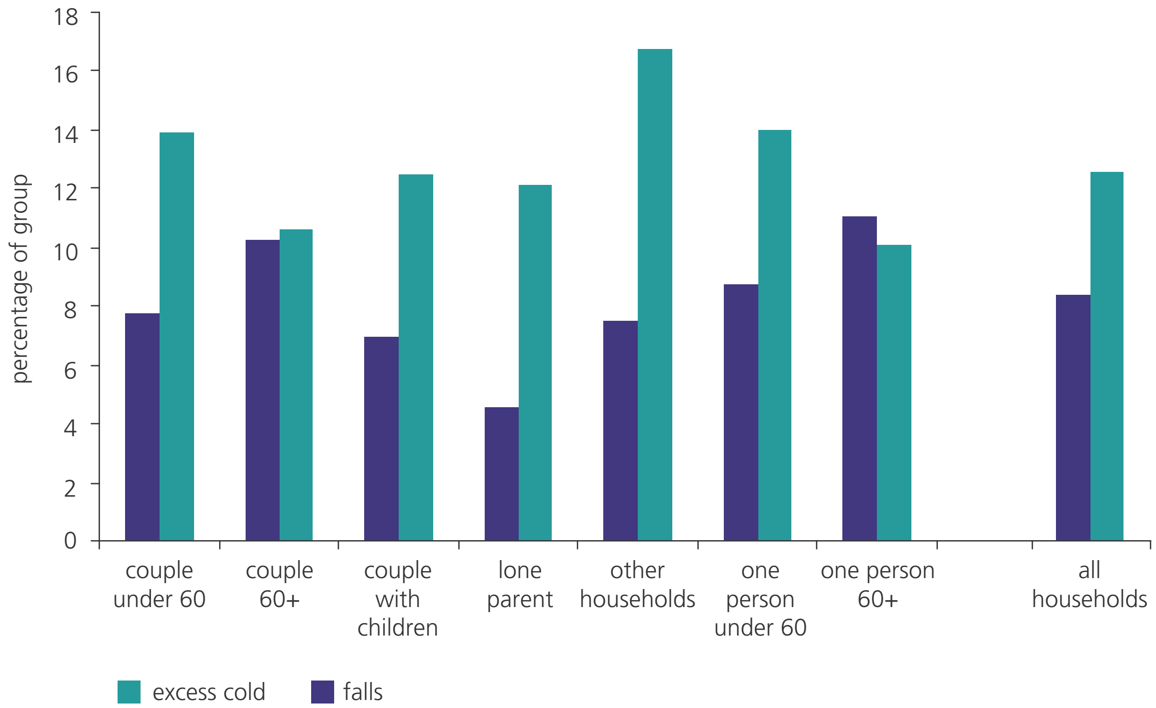


Base: all dwellings
Note: underpinning data are presented in Summary Statistic Table SST4.2
Source: English Housing Survey 2008 dwelling sample

4.64 The 'other' hazards covered by the EHS include those relating to fire and hot surfaces. Just under half a million dwellings (2%) had one or both of these Category 1 hazards in 2008. These hazards were more common in converted flats (7%), pre 1919 dwellings and dwellings in city centres (6%), and small terraced houses and private rented dwellings (4%).

4.65 Just over one in five (22%) households lived in dwellings with one or more Category 1 hazards and this rose to 27% for other multi person households. The type of hazards present varied far more for different groups. Households aged 60 or over were the most likely to live in dwellings with excess cold hazards and the least likely to live in dwellings with falls hazards, Figure 4.28. This is partly because a significant minority of these older households lived in bungalows which performed rather better in relation to falls than excess cold, Figure 4.25.

Figure 4.28: Percentage of households with different types of Category 1 hazard by household composition, 2008



Base: all households
Note: underpinning data are presented in Annex Table 4.11
Source: English Housing Survey 2008, household sub-sample

Chapter 5
Energy performance

This chapter assesses the energy performance of the housing stock in terms of the energy efficiency and carbon dioxide emissions associated with its heating, lighting and ventilation characteristics. The first section looks at the current performance of the housing stock, in terms of energy efficiency ratings and carbon emissions in 2008. The second section assesses the change in energy and carbon saving insulation and heating measures that has occurred over the last 12 years.

Key findings

- **The energy efficiency rating of the housing stock steadily increased from 42 SAP points in 1996 to 51 in 2008. In recent years the private rented sector has closely matched the average rating of owner occupied stock, improving from a three point gap in 1996. The gap between local authority and housing association dwellings also narrowed slightly, although the latter still had the highest mean rating at 60 SAP points in 2008.**
- **Carbon dioxide emissions per dwelling averaged 6.3 tonnes/year in 2008, ranging from 4.0 tonnes/year in the housing association tenure to 7.0 tonnes/year in owner occupied dwellings. This was due to a combination of better energy efficiency measures in housing association stock and the larger size of privately owned dwellings.**
- **In terms of heating, lighting and ventilation, the social sector accounted for only 11% of the total CO_2 emissions (16 million tonnes/yr) while the private sector accounted for the remaining 89% at 124 million tonnes/yr.**
- **Dwelling age is a strong indicator of energy efficiency, with pre 1919 dwellings averaging 23 SAP points fewer than post 1990 dwellings in 2008, while their mean CO_2 emissions per dwelling were twice those of post 1990 stock.**
- **In terms of the location of dwellings, mean SAP decreased and CO_2 emissions increased from more urban to more rural areas. This is linked to a number of factors, including the larger size of rural dwellings and their typically earlier construction, which makes lower energy efficiency measures such as solid walls and non-mains gas heating more prevalent.**
- **The proportion of dwellings with cavity walls was 70% in 2008, with little increase in recent years due to the vast majority of solid walled**

stock being retained each year. Nevertheless, the proportion of cavity walls containing insulation increased from 22% to 48% between 1996 and 2008.

- **The number and proportion of lofts being well insulated increased steadily, with 25% having at least 150mm of insulation in 2003 and rising to 38% by 2008. However, there has been a constant 3–4% remaining un-insulated, the majority of which were in pre 1945 dwellings.**
- **Recent years have seen a rapid increase in the installation of the most efficient condensing boiler models due to changes in building regulations. These have typically replaced standard boilers or back boilers.**

Energy performance of dwellings

5.1 The key measures of energy performance of the housing stock used throughout this chapter are the energy efficiency (SAP) rating and carbon dioxide (CO_2) emissions, Box 1.

Box 1: Energy performance indicators

Energy efficiency rating: The SAP rating is based on each dwelling's energy costs per square metre and is calculated using a simplified form of the Standard Assessment Procedure (SAP). The energy costs take into account the costs of space and water heating, ventilation and lighting, less any cost savings from energy generation technologies. The rating is expressed on a scale of 1–100 where a dwelling with a rating of 1 has poor energy efficiency (high costs) and a dwelling with a rating of 100 represents a completely energy efficient dwelling (zero net energy costs per year).

The energy efficiency rating is also presented in an A to G banding system for an Energy Performance Certificate, where Energy Efficiency Rating (EER) Band A represents low energy costs (i.e. the most efficient band) and EER Band G represents high energy costs (i.e. the least energy efficient band).

Carbon dioxide emissions: The carbon dioxide (CO_2) emissions are derived from space heating, water heating, ventilation and lighting, less any emissions saved by energy generation and are measured in tonnes per year. This chapter largely deals with the average emissions per dwelling, but also covers the total emissions for different sub-sections of the stock.

It is important to emphasise that this assessment of the housing stock is not based on actual energy consumption and emissions, but on the consumption (and resulting emissions) required under a standard occupancy and standard heating pattern for each dwelling. This enables the performance of the housing stock to be assessed on a comparable basis (between sections of the stock and over time), independently of the heating behaviours of individual households. However this also means that the effect of additional energy efficiency measures on performance are **potential** improvements that additionally depend on households modifying the way they heat their dwellings in response to greater efficiency for cost and emission savings to be realised. Actual consumption reductions (and associated emissions) may 'lag' behind actual improvements.

5.2 The mean SAP rating for the whole stock continued to increase in 2008. The mean SAP increased by 1 point from 50 to 51 (Energy Efficiency Rating Band E) between 2007 and 2008. This increase maintained the steady rate of improvement evidenced since 1996 when the mean SAP rating was 42. It has been driven partly by changes to Building Regulations for new dwellings and partly through energy efficiency improvements carried out on the existing stock by homeowners and landlords (funded privately or through Government led programmes).

5.3 There has been a substantial improvement in the average energy efficiency of dwellings in all tenures between 1996 and 2008, Figure 5.1 and Table 5.1. In 2008 social housing typically performed much better than dwellings in the private rented or owner occupied sectors. Housing association dwellings, with an mean SAP rating of 60 was nearly 10 points higher than the stock average. Local authority dwellings were also significantly above the stock average with a mean SAP rating of 58. The private tenures both had a mean SAP rating of 50.

Figure 5.1: Energy efficiency, mean SAP rating by tenure, 1996–2008

Base: all dwellings
Note: underpinning data are presented in Table 5.1
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

Table 5.1: Energy efficiency, mean SAP rating by tenure, 1996–2008

all dwellings

	1996	2001	2003	2004	2005	2006	2007	2008
owner occupied	41.1	44.4	45.0	45.6	46.1	46.9	48.1	49.6
private rented	37.9	41.9	44.4	45.7	46.0	46.6	48.1	50.2
local authority	45.7	49.6	52.0	53.9	55.3	55.8	56.2	58.0
housing association	50.9	56.4	56.7	57.3	58.9	59.3	59.3	60.3
all dwellings	**42.1**	**45.7**	**46.6**	**47.4**	**48.1**	**48.7**	**49.8**	**51.4**

Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

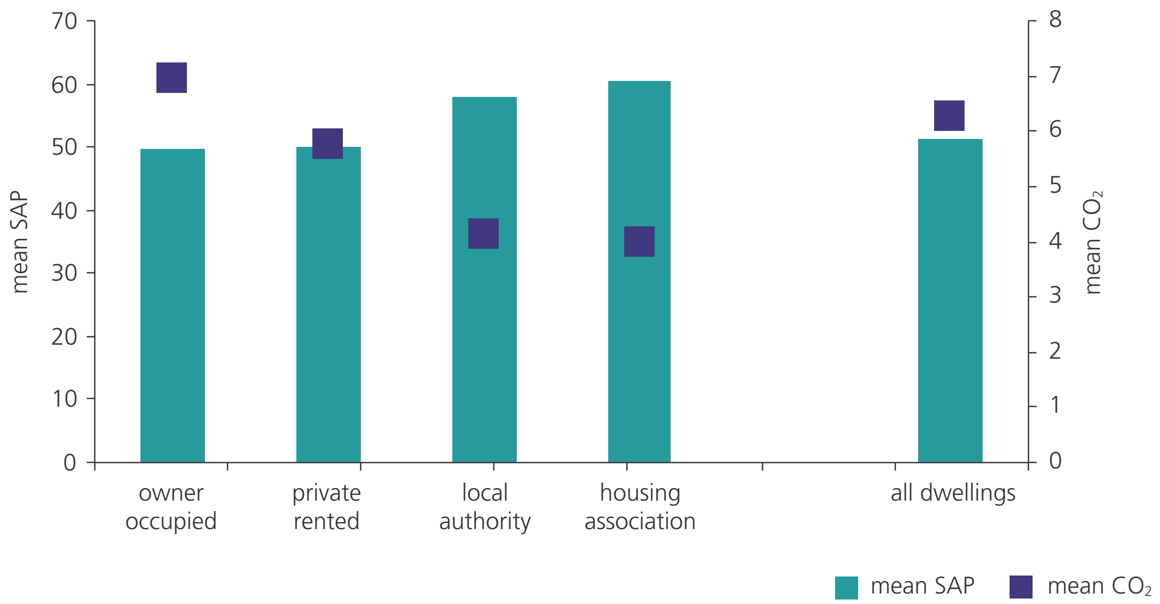
5.4 There are several reasons for this difference in the energy efficiency of private and social sector housing. Dwellings found within the social sector tend to have higher levels of insulation, partly due to the sector's younger age profile but also because of the type of dwellings found there. Compared with private sector dwellings, social housing is much less likely to be detached or semi detached (and have large surface areas facing the elements) and much more likely to be flats (which often have another dwelling above or below which minimises heat loss).

5.5 The energy efficiency of a dwelling reflects the type of heating system in use, its fuel, and the fabric and insulation of the building. The amount of carbon dioxide (CO_2) emitted is based on similar factors, but unlike the SAP rating (which is calculated per square meter of floor), emissions are calculated for the whole dwelling. This means that the size of the dwelling is an important factor and larger dwellings tend to emit more CO_2 each year as they use more fuel for space heating, water heating, lighting and ventilation. Across the stock, the mean CO_2 emitted per dwelling was 6.3 tonnes per year in 2008.[16] This varied from 3.1 tonnes per year as an average for dwellings with a floor area of less than 50m^2 to 10.4 tonnes per year as an average for dwellings with a floor area greater than 110m^2.

5.6 Figure 5.2 and Table 5.2 compare the mean SAP rating and yearly CO_2 emissions for each of the four tenure types. The best performing tenures were the social tenures, with the highest mean SAP ratings and the lowest annual CO_2 emissions. Dwellings in the housing association group had the highest mean SAP rating of 60 and the lowest annual CO_2 emissions of 4 tonnes per year. Owner occupied dwellings (along with the private rented sector) had the lowest SAP rating of the tenures at 50 and the highest CO_2 emissions at 7 tonnes per year.

[16] The SAP methodology on which EHS estimates of both energy efficiency and CO_2 emissions are based tends to provide a higher estimate of energy requirements and associated emissions for heating, lighting and ventilating dwellings than might otherwise be derived from estimates based on actual household energy consumption. This is primarily because the assumed heating regime (achieving a temperature of 21°C in the living area of the dwelling and 18°C in the rest of the dwelling for a standard number of hours), and the assumed hot water and lighting requirements (depending on a level of occupancy determined by the floor area of the home rather than actual occupancy) are more likely to result in an overall over estimation than under estimation of actual energy consumption for most dwellings. Such standardising assumptions are necessary to be able to compare the energy performance of one part of the housing stock with another and over time.

Figure 5.2: Mean SAP rating and annual CO_2 emissions (tonnes/yr) by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Table 5.2
Source: English Housing Survey 2008, dwelling sample

Table 5.2: Mean SAP rating and annual CO_2 emissions by tenure, 2008

all dwellings

	mean SAP	mean CO_2 per dwelling (tonnes/yr)	total CO_2 for the group (M tonnes/yr)
owner occupied	49.6	7.0	105.0
private rented	50.2	5.7	18.9
local authority	58.0	4.1	8.2
housing association	60.3	4.0	7.8
all dwellings	**51.4**	**6.3**	**140.0**

Source: English Housing Survey 2008, dwelling sample

5.7 Tenure differences are partly explained by the different type and age profiles of their stock. Purpose built flats, both high and low rise, are the most energy efficient dwelling types with the highest SAP ratings (10 points above the average for the stock in 2008) and the lowest carbon emissions, Figure 5.3 and Table 5.3. Interestingly, converted flats had the lowest mean SAP rating of 45, but the CO_2 emissions were below average for the stock. Converted flats tend to have the less efficient insulation and heating types which contributes to the low SAP rating but they also tend to have a low floor area which means the CO_2 emissions are not as high as larger dwelling types, for example detached houses. The mean floor area for converted flats in 2008 was $70m^2$ while that for detached houses was more than double at $147m^2$. This was this reason why detached houses had the highest CO_2 emissions with nearly 10 tonnes per year.

Figure 5.3: Mean SAP rating and annual CO_2 emissions (tonnes/yr) by dwelling type, 2008

Base: all dwellings
Notes:
1) pb flat = purpose built flat
2) underpinning data are presented in Table 5.3
Source: English Housing Survey 2008, dwelling sample

Table 5.3: Mean SAP rating and annual CO_2 emissions by dwelling type, 2008

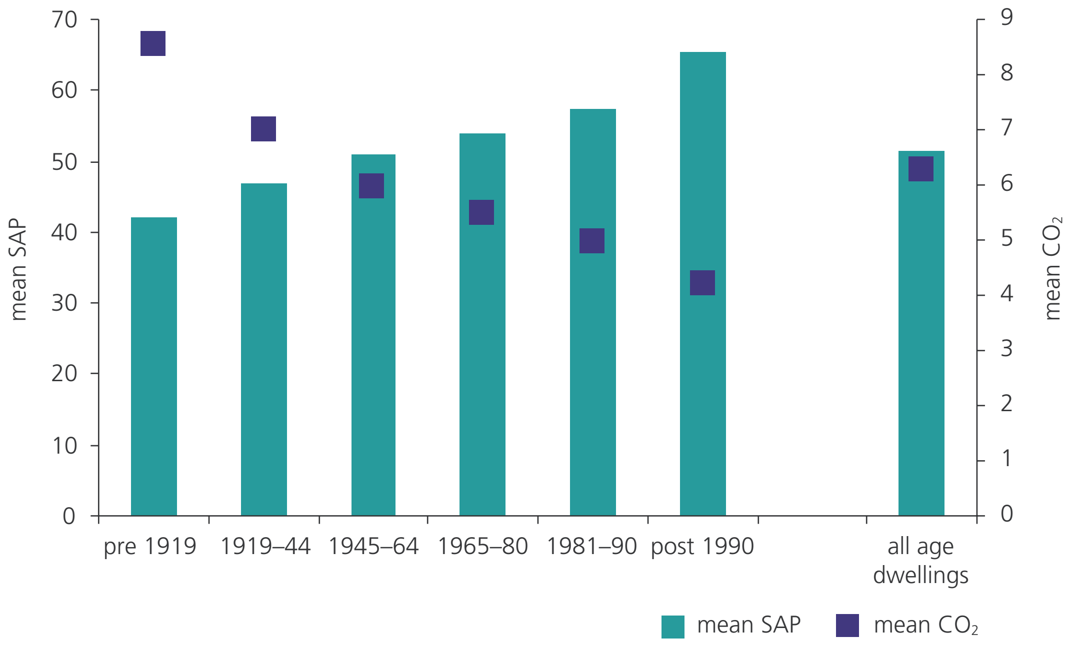
all dwellings

	mean SAP	mean CO_2 per dwelling (tonnes/yr)	total CO_2 for the group (M tonnes/yr)
end terrace	48.8	6.2	13.7
mid terrace	55.1	5.2	21.5
semi detached	48.7	6.7	38.5
detached	48.0	9.6	37.3
bungalow	46.5	6.0	12.7
converted flat	44.8	5.8	4.8
purpose built flat, low rise	61.8	3.3	9.9
purpose built flat, high rise	61.2	3.5	1.2
all dwellings	**51.4**	**6.3**	**140.0**

Source: English Housing Survey 2008, dwelling sample

5.8 There is a steady trend of increasing SAP ratings and decreasing CO_2 emissions from the oldest to the newest housing stock, Figure 5.4 and Table 5.4. The CO_2 emissions of dwellings constructed after 1990 were less than half of those constructed before 1919 with emissions of 4.2 and 8.5 tonnes per year respectively. The SAP ratings also show a marked difference with dwellings built before 1919 showing an mean SAP rating of 42 and those built after 1990 achieving an mean SAP rating of 66.

Figure 5.4: Mean SAP rating and annual CO_2 emissions (tonnes/yr) by dwelling age, 2008



Base: all dwellings
Note: underpinning data are presented in Table 5.4
Source: English Housing Survey 2008, dwelling sample

Table 5.4: Mean SAP rating and annual CO_2 emissions by dwelling age, 2008

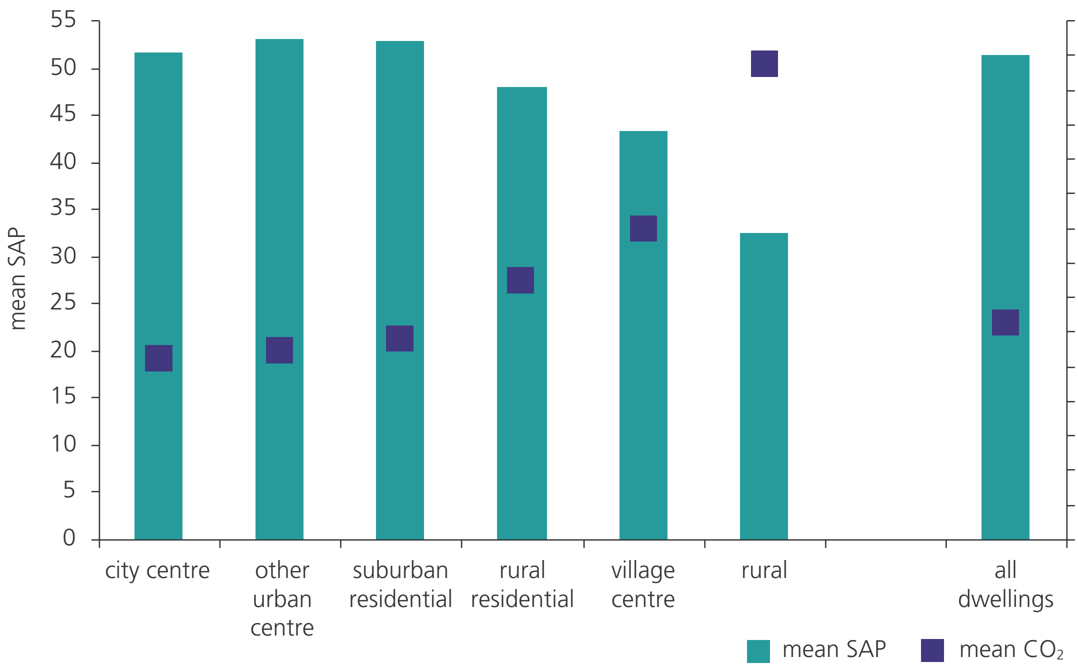
all dwellings

	mean SAP	mean CO_2 per dwelling (tonnes/yr)	total CO_2 for the group (M tonnes/yr)
pre 1919	42.2	8.5	40.6
1919–44	46.9	7.0	25.5
1945–64	50.9	6.0	25.9
1965–80	53.9	5.5	26.4
1981–90	57.3	5.0	9.7
post 1990	65.5	4.2	11.4
all age dwellings	**51.4**	**6.3**	**140.0**

Source: English Housing Survey 2008, dwelling sample

5.9 CO_2 emissions and mean SAP ratings show a distinct trend in terms of the dwelling location, Figure 5.5, Table 5.5. Generally the more rural the location of the dwelling, the less energy efficient it is, with a lower SAP rating and higher annual CO_2 emissions. The rural stock is more likely to be older, of solid walled construction, larger, detached and off the gas network compared with housing in more urban areas. In 2008 rural dwellings had a mean SAP rating of 33 compared to the mean city centre SAP rating of 52. CO_2 emissions also follow this trend with rural CO_2 emissions reaching nearly 14 tonnes per dwelling per year in 2008, which was nearly three times higher than the 5 tonnes per year recorded on average in city centres.

Figure 5.5: Mean SAP rating and annual CO_2 emissions (tonnes/yr) by area type, 2008



Base: all dwellings
Note: underpinning data are presented in Table 5.5
Source: English Housing Survey 2008, dwelling sample

Table 5.5: Mean SAP rating and annual CO_2 emissions by area type, 2008

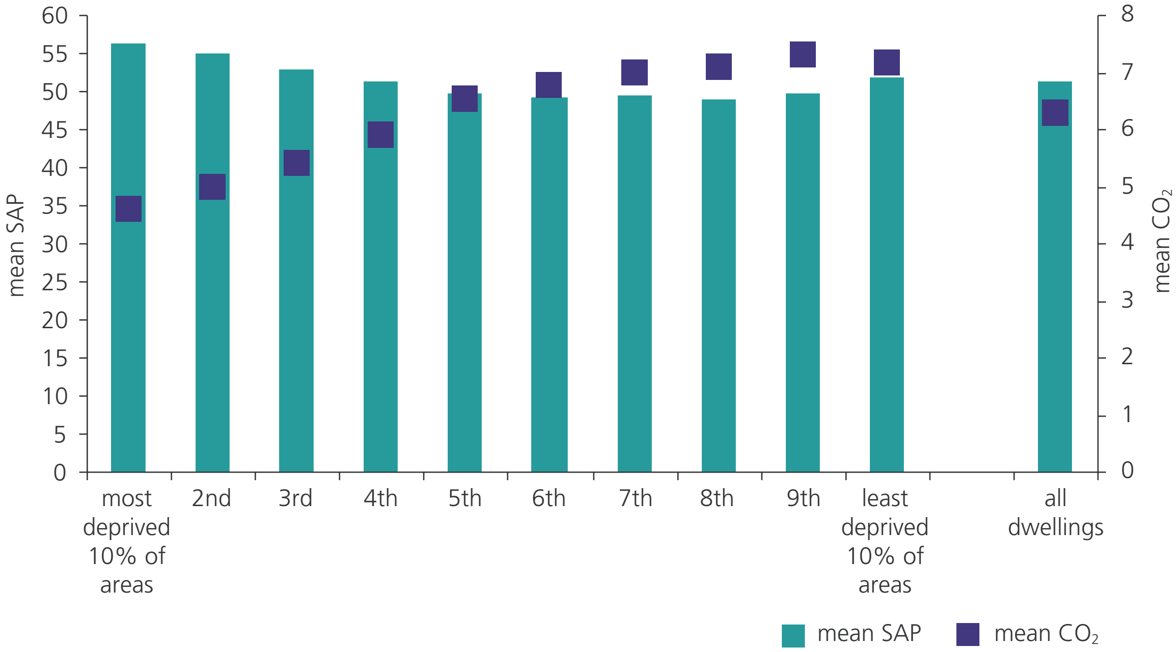
all dwellings

	mean SAP	mean CO_2 per dwelling (tonnes/yr)	total CO_2 for the group (M tonnes/yr)
city centre	51.6	5.2	3.7
other urban centre	53.1	5.5	23.1
suburban residential	53.0	5.8	76.3
rural residential	48.0	7.5	19.5
village centre	43.3	9.0	7.5
rural	32.6	13.7	9.4
all dwellings	**51.4**	**6.3**	**140.0**

Source: English Housing Survey 2008, dwelling sample

5.10 Dwellings in the most deprived areas are typically much more efficient and emit less CO_2 than those in more affluent areas, Figure 5.6, Table 5.6. In 2008 the annual mean CO_2 emissions increased from 4.6 tonnes per year in the most deprived 10% of areas to 7.0 tonnes or more in the 40% of most affluent areas. The energy efficiency of dwellings followed a similar pattern, with a mean SAP rating of 56 in the most deprived areas and decreasing to less than 50 for mid-ranked areas. Only in the most affluent areas did the mean SAP rating rise above 50 again. In the most deprived areas, dwellings are more likely than elsewhere to be more efficient types (terraces or purpose built flats) and be smaller (emitting less carbon dioxide).

Figure 5.6: Mean SAP rating and annual CO_2 emissions (tonnes/yr) by level of local area deprivation, 2008



Base: all dwellings
Notes:
1) underpinning data are presented in Table 5.6
2) the level of area deprivation is based on Census lower level Super Output Areas ranked by the 2007 Index of Multiple Deprivation and grouped in to ten equal numbers of areas
Source: English Housing Survey 2008, dwelling sample

Table 5.6: Mean SAP rating and annual CO_2 emissions by level of local area deprivation, 2008

all dwellings

	mean SAP	mean CO_2 per dwelling (tonnes/yr)	total CO_2 for the group (M tonnes/yr)
most deprived 10% of areas	56.2	4.6	10.0
2nd	54.9	5.0	11.4
3rd	52.9	5.4	11.9
4th	51.3	5.9	13.4
5th	49.7	6.5	14.5
6th	49.3	6.8	14.8
7th	49.4	7.0	16.1
8th	49.0	7.1	16.2
9th	49.6	7.3	15.7
least deprived 10% of areas	51.7	7.2	15.4
all dwellings	**51.4**	**6.3**	**140.0**

Source: English Housing Survey 2008, dwelling sample

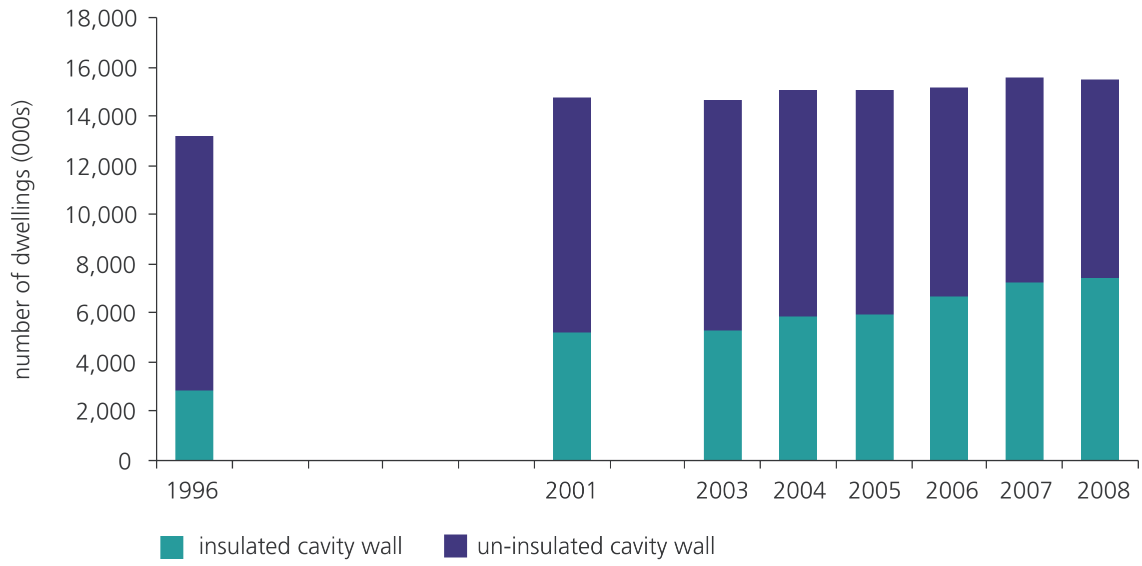
Improvement measures 1996–2008

5.11 There is a wide range of energy improvement measures that can be applied to a dwelling to reduce costs and emissions. Well established measures include double glazing, loft insulation, cavity wall insulation, hot water cylinder insulation or replacing an old inefficient boiler with a newer, more energy efficient model. This section looks in detail at trends in the take up of these measures. In addition there is currently very limited but increasing take up of renewable energy systems and solid wall insulation solutions. The section also provides some initial baseline information on these wider technologies where possible.

Cavity walls

5.12 The cavity wall method of building dwellings became widespread during the 1920s and this form of wall construction has been employed on the great majority of dwellings built during and since the 1930s. Cavity walls in new dwellings are generally insulated at the time of construction to meet Building Regulations thermal performance requirements, and an increasing proportion of those that were not have since been filled retrospectively, Figure 5.7. As a result, the number of cavity walls with insulation increased from around 2.9 million in 1996 to 7.4 million in 2008 (some 48% of all dwellings with cavity walls).

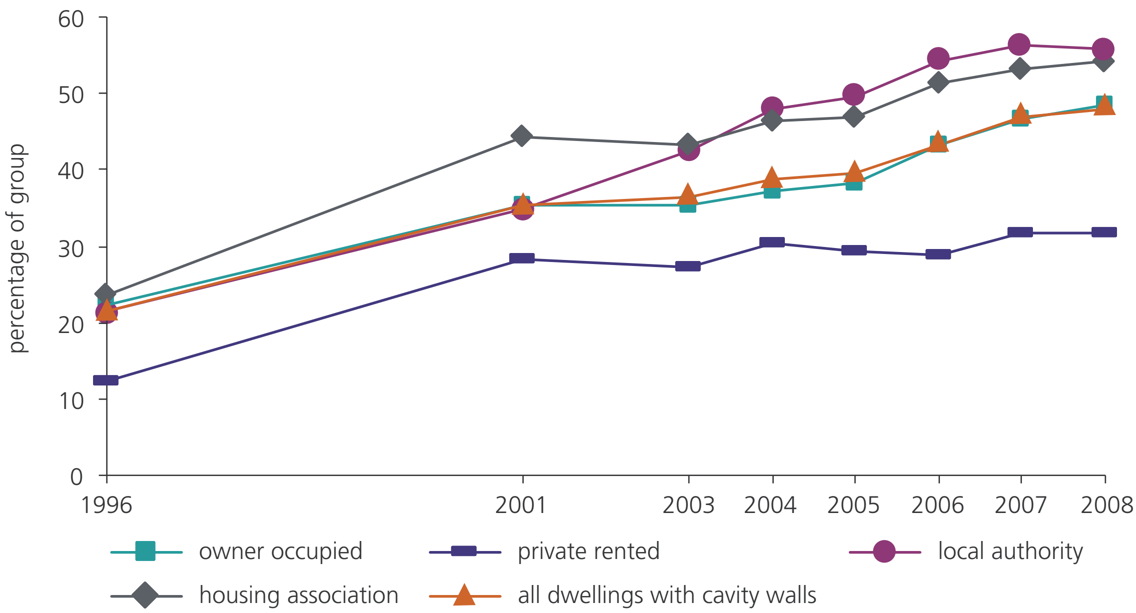
Figure 5.7: Dwellings with cavity walls and cavity wall insulation, 1996–2008



Base: all dwellings
Note: underpinning data are presented in Annex Tables 5.1 and 5.2
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

5.13 Since 1996, all tenures have seen a substantial improvement with the proportion of cavity walls insulated having more than doubled in each by 2008, Figure 5.8. Over this period the private rented sector has consistently had the lowest proportion of cavity walls insulated, but nevertheless rising from 12% in 1996 to 32% in 2008. The social tenures have outperformed owner occupied housing over the same period. In 1996 there was little difference with around 22% to 24% of cavity walls insulated in each of these three tenures. However the local authority and housing association stock had the majority of cavity walls insulated by 2008 (56% and 54% respectively) compared to 48% of owner occupied dwellings with cavity walls.

Figure 5.8: Dwellings with insulated cavity walls by tenure, 1996–2008



Base: all dwellings with cavity walls
Note: underpinning data are presented in Annex Table 5.2
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

5.14 The pre 1919 housing stock is typically of a solid wall construction, prohibiting the same approach to insulation as cavity walled dwellings. Solid walls can have retrospective insulation added either internally or externally but this is relatively expensive and can be far more disruptive and/or unappealing in terms of its impact on the property.[17] Consequently the number of dwellings with solid wall insulation is low. In 2008, just over 133,000 dwellings had external solid wall insulation which is 2% of all solid walled dwellings and less than one percent of the whole stock.[18]

[17] Internal insulation requires a significant amount of floor space and so is unpopular particularly in smaller dwellings, although it may be installed for sound proofing as well as energy efficiency reasons. External insulation is best carried out as part of an extensive external refurbishment as most of the features on the wall will be affected. Restrictions on changes to the dwelling may also preclude solid wall insulation.

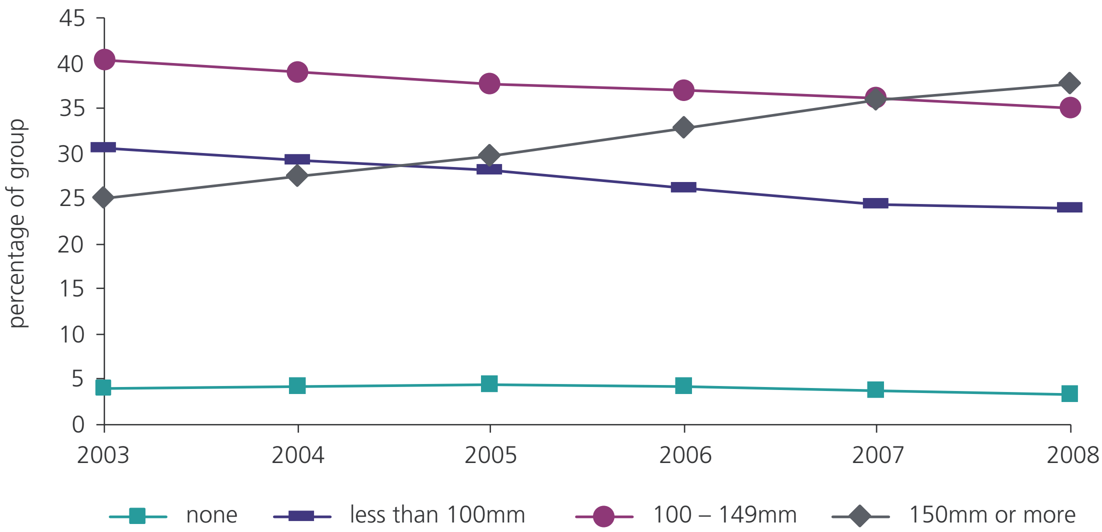
[18] The survey is collecting information on internal wall insulation for the 2009 Report.

Loft insulation

5.15 As with wall insulation for new buildings, Building Regulations specify a minimum level of loft insulation which means that all newly constructed dwellings have well insulated lofts. Many lofts can be insulated at any time, but for some dwellings the loft space cannot be accessed to apply insulation because of a loft conversion or the (low) pitch of the roof.

5.16 There was steady improvement in the proportion of dwellings with lofts which have at least 150mm of insulation, from 25% in 2003 to 38% (7.4 million) in 2008, Figure 5.9. In consequence the proportion with less than this amount fell. The residual 3% over this period with no loft insulation (670,000 in 2008) includes those with lofts that are difficult to insulate effectively.

Figure 5.9: Percentage of dwellings with given loft insulation levels, 2003–2008



Base: all dwellings with a loft
Note: underpinning data are presented in Annex Table 5.3
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

5.17 All tenures have seen a steady increase in the proportion of lofts with insulation depths of 150mm or more, Figure 5.10. As with cavity wall insulation, social housing performed best with 49% of local authority lofts insulated to 150mm or more and 56% of housing association lofts achieving the same by 2008. In contrast, only 27% of private rented dwellings with lofts also had more than 150mm of loft insulation by 2008.

Figure 5.10: Dwellings with 150mm or more of loft insulation by tenure, 2003–2008

Base: all dwellings with a loft
Note: underpinning data are presented in Annex Table 5.3
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

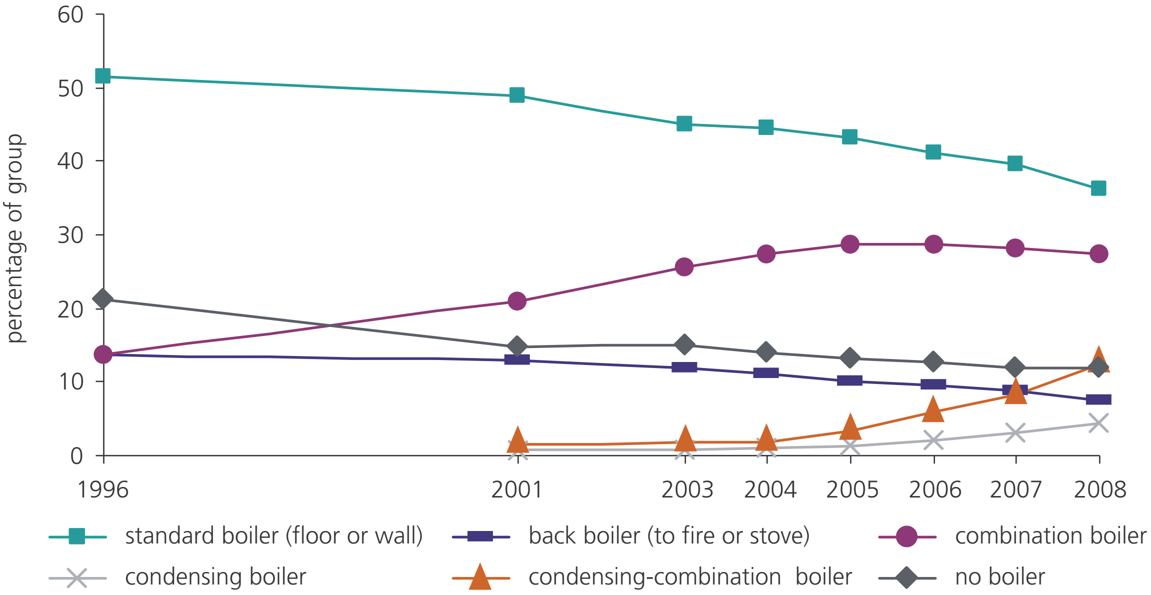
Condensing boilers

5.18 Recent changes to Building Regulations have seen an increase in condensing boilers as they became mandatory for all replacements, Figure 5.11. Between 1996 and 2008 the proportion of dwellings with standard and back boilers declined as older and failing boilers were replaced with new, more efficient condensing boilers. In 2008 17% of all dwellings had a condensing or condensing combination boiler compared to only 2% in 2003. While the proportion of dwellings with *standard* combination declined since 1996, *condensing* combination boilers were increasing at a much higher rate which led to an overall increase in the proportion of dwellings with combination boilers in 2008.

Hot water cylinders

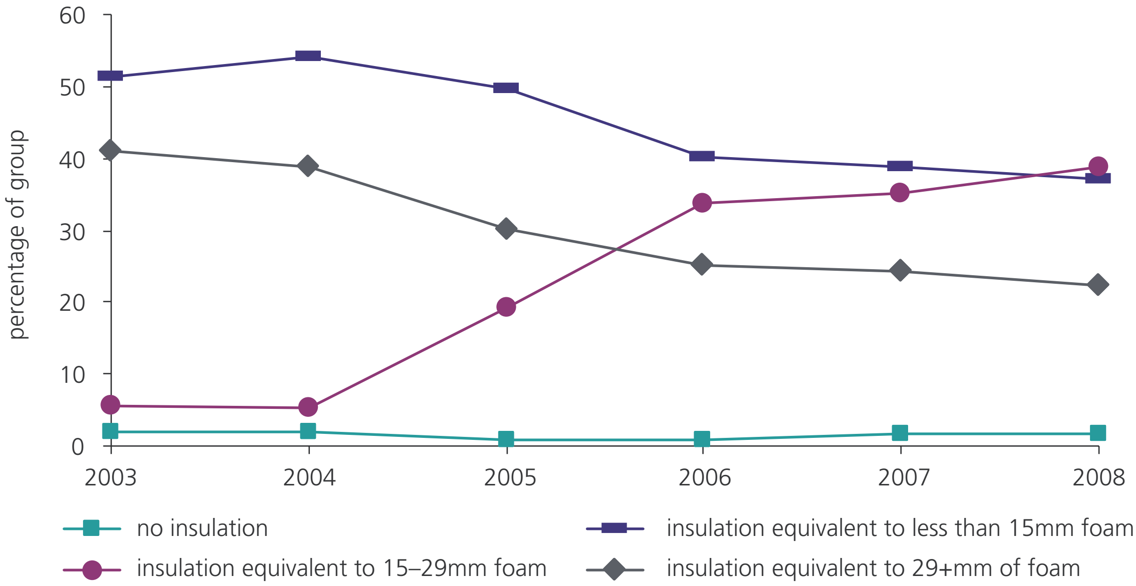
5.19 With the increasing take up of combination boilers, the number of dwellings with hot water cylinders is gradually decreasing over time – from 16.7 million in 1996 to 13.1 million in 2008. The proportion of hot water cylinders with 15–29mm foam (or equivalent) insulation increased rapidly from 2003 to 39% in 2008, Figure 5.12. This is likely to be due to the increase in factory installed foam in recent years which tends to be 25 mm thick (but equivalent to a much greater thickness of loose jacket foam insulation). In consequence the proportion of hot water cylinders with higher levels of insulation (29mm or more) actually declined over this period – from 41% to 22%. The proportion of hot water cylinders with at least the equivalent of 15mm of factory installed foam insulation increased from 47% in 2003 to 61% in 2008.

Figure 5.11: Percentage of dwellings with given boiler types, 1996–2008



Base: all dwellings
Note:
1) in 1996 figures were too small to provide data on condensing and condensing-combination boilers
2) underpinning are presented in Annex Table 5.4
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

Figure 5.12: Percentage of dwellings with given levels of hot water cylinder insulation, 2003–2008



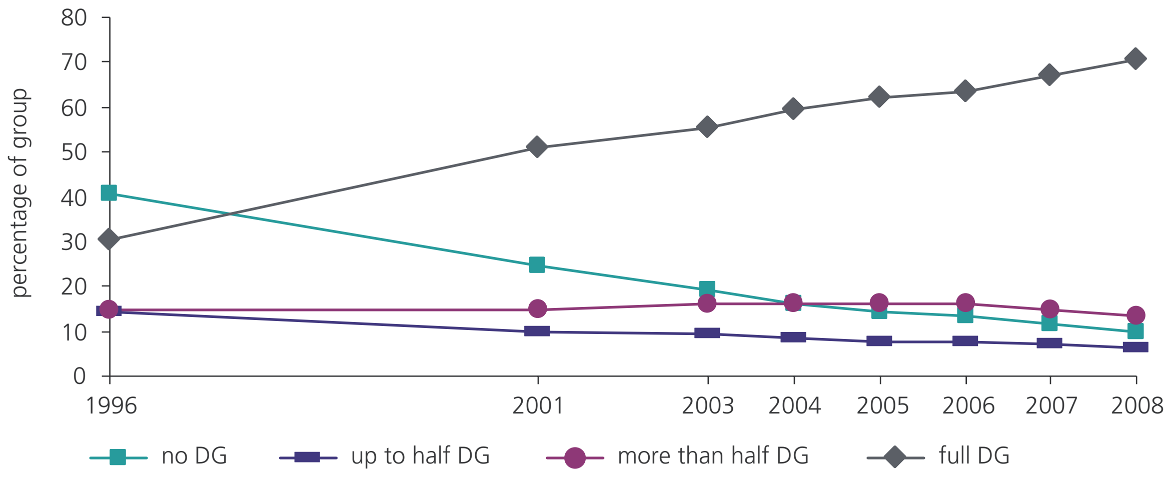
Base: all dwellings with a hot water cylinder
Note:
1) foam and jacket insulation have been combined at appropriate levels to create equivalent bands based on foam Factory installed foam is more efficient than retrospectively installed jacket insulation, and 25 mm of spray foam is the equivalent of a jacket of 80 mm
2) underpinning are presented in Annex Table 5.5
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

5.20 There was little difference between the tenures. In 2008 nearly 64% of hot water cylinders in social housing had at least the equivalent of 15 mm of factory installed foam, compared to 61% of cylinders in private rented dwellings.

Double glazing

5.21 From 2006 Building Regulations have required replacement and new build windows to be double glazed. Although relatively cost inefficient as an energy improvement measure, double glazing has been very popular since the 1990s and the proportion of dwellings which were completely double glazed increased substantially from 30% in 1996 to 71% in 2008, Figure 5.13. Unsurprisingly, the proportion of dwellings with no or part double glazing decreased over the same period.

Figure 5.13: Percentage of dwellings with given levels of double glazing, 1996–2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 5.6
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

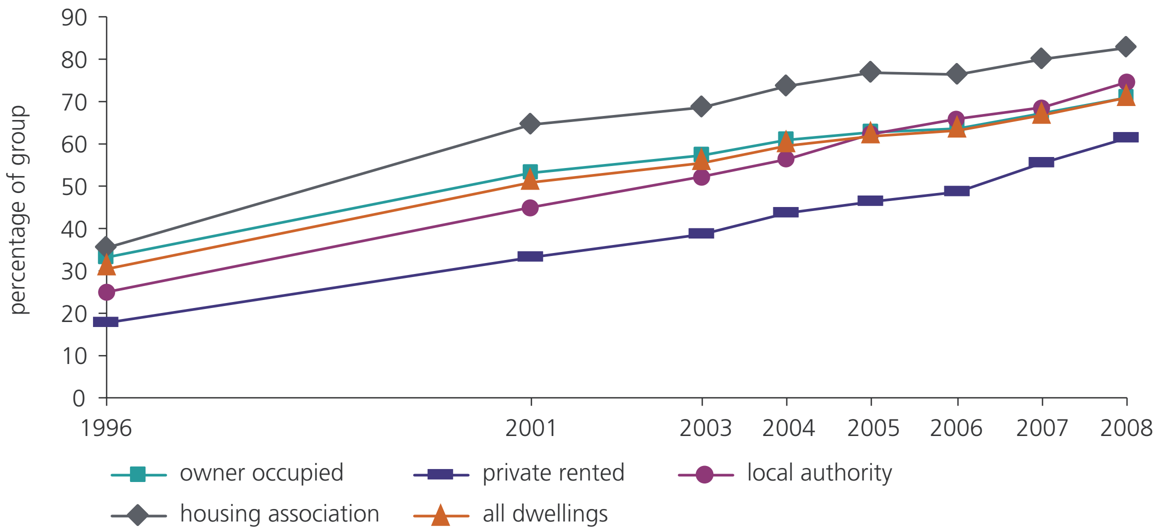
5.22 The rapid increase in dwellings with full double glazing occurred in all tenures, Figure 5.14. Housing association dwellings (83%) were most likely to be fully double glazed in 2008, and private rented dwellings least likely (61%). While local authority dwellings were a little less likely than average to have full double glazing in 1996, they were above average (75%) in 2008.

5.23 As awareness of energy efficiency and low carbon measures improves alongside continual developments to the Building Regulations, more households will choose to fit renewable technologies such as solar water heating, photovoltaic panels or wind turbines to their dwellings.[19] In terms of initial outlay, these are quite high cost measures and initial estimates from the survey suggest that 128,000 dwellings have some form of solar panel system (either photovoltaic

[19] For renewable technologies, the survey currently assesses the presence of solar water and photovoltaic panels and intends to extend this to wind turbines with assessments of the latter becoming available from the 2012 report.

panels for micro generation of electricity or solar water heating panels) which is little more than 0.5% of the housing stock.

Figure 5.14: Dwellings with full double glazing by tenure, 1996–2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 5.6
Source: English House Condition Survey 1996–2007, English Housing Survey 2008, dwelling sample

Chapter 6
Energy improvement potential

The previous chapter described the energy performance of the housing stock in 2008 and how this had improved since 1996. This chapter examines both how far it is practical to carry out further heating and insulation improvements that are relatively straightforward and cost-effective and their costs. It then discusses what impact carrying out these works would have on the energy performance and CO_2 emissions of the stock as a whole and which parts would see the largest improvements in performance.

Key findings

- **In total 20.1 million dwellings could benefit from one or more of the improvement measures recommended in the Energy Performance Certificate (EPC) methodology. At 2008 prices, these works would cost in the region of £31 billion (an average of about £1,500 per dwelling).**
- **Over three quarters (77%) of dwellings with boilers could benefit from replacing these with condensing boilers. Some 44% of dwellings with accessible lofts and 42% of those with cavity walls could also benefit from installing or topping up these types of insulation.**
- **Most of the EPC recommended measures had greater improvement potential in the private sector.**
- **If all of the potential measures were installed, the mean SAP rating would increase by 11.5 points and the mean annual fuel costs (based on 2005 fuel prices) would fall by £147. The total CO_2 emissions would reduce by 26% which would represent a reduction of 35.6 million tonnes across the stock.**
- **The greatest savings in fuel costs and the largest reductions in CO_2 emissions would be in the owner occupied stock, detached houses and rural dwellings.**
- **There is less potential to improve the energy performance of the oldest (pre 1919) dwellings because the straightforward and cost effective EPC measures cannot always be applied to these dwellings. Nevertheless, installing these where practical would substantially reduce the very high CO_2 emissions in these dwellings from an average of 8.5 tonnes/year to 6.7 tonnes/year.**

Improvement measures

6.1 The measures examined were the lower and higher cost recommendations covered by the Energy Performance Certificate (EPC). These are detailed in Box 1.

Box 1: Potential improvement measures based on EPC recommendations

Low cost measures (less than £500):

- installation or upgrade of **loft insulation** which is less than 250mm, where the dwelling is not a mid- or ground-floor flat and where the loft does not constitute a full conversion to a habitable room;
- installation of **cavity wall insulation**, where the wall is of cavity construction;
- installation or upgrade of **hot water cylinder insulation** to a level matching a 160mm jacket. Recommended where the current level is less than 25mm of spray foam or less than a 100mm jacket.

Higher cost measures (more than £500):

- upgrade to **central heating controls**, for boiler driven systems, typically to a stage where a room thermostat, a central programmer and thermostatic radiator valves (TRV's) have been installed (although the range of upgraded controls can vary depending on the heating system);
- upgrading to a **class A condensing boiler** using the same fuel (mains gas, LPG or fuel oil), where a non-communal boiler is in place (this improvement measure is most appropriate when the existing central heating boiler needs repair or replacement);
- upgrading existing storage radiators (or other electric heating) to more **modern, fan-assisted storage heaters**;
- installation of a **hot water cylinder thermostat** where a storage cylinder is in use but no thermostat exists;
- replacement **warm-air unit** with a fan-assisted flue, where the original warm-air heating unit is pre-1998;
- installation of a manual feed **biomass boiler** or **wood pellet stove** where an independent, non-biomass solid fuel system exists. This measure was assessed to identify the number of dwellings that would benefit from this measure but was *not* included in the post improvement energy efficiency rating or carbon dioxide emissions due to a combination of the small amount of dwellings that would benefit and modelling complexity.

The measures are only recommended for implementation if the improvement to the SAP rating from that measure alone will be at least 0.95 SAP points.

The suggested measures do *not* necessarily imply that current measures in place in the home are defective or that the home is 'deficient' in terms of any particular standard. Nor do they consider any radical change in the type of heating system (which may be subject to fuel supply, planning or other constraints).

Other low or high cost measures included in the Energy Performance Certificate are not included in the section because they would only be recommended in a small number of dwellings or because the survey is unable to assess how effective they would be in improving the performance of individual dwellings. It is also important to emphasise that additional more expensive measures, including those arising from new carbon reduction technologies are not included. The focus here is on standard, practical measures that most households or landlords could readily implement. See Glossary for a fuller list of all potential measures to improve the energy performance of housing.

6.2 In 2008 some 20.1 million dwellings (90% of the housing stock) could benefit from at least one of the improvements listed in Box 1, Table 6.1. The measure that would benefit the largest number of dwellings (14.9 million) was replacing the existing conventional central heating boiler with a condensing unit. Large numbers of dwellings could also benefit from installing or increasing the amount of loft insulation (8.6 million), upgrading central heating controls (7.4 million) and from installing cavity wall insulation (6.5 million), Table 6.1 and Figure 6.1.

6.3 The total cost of carrying out these improvements was around £31 billion at 2008 prices. This equates to an average cost of around £1,500 per improved dwelling.

6.4 In 2008, some 2.4 million dwellings had storage radiators or other electric heating systems and around two-thirds of these could benefit from an upgrade to more modern slim-line storage heaters. Around 130,000 dwellings could benefit from upgrading their existing warm air heating system and 150,000 from replacing their solid fuel boiler with a HETAS[20] approved biomass boiler.

6.5 Around a third (32%) of the 13.1 million dwellings with hot water storage cylinders could be improved by upgrading the cylinder insulation and 1.2 million (9%) by fitting a cylinder thermostat.

[20] The official body of solid fuel domestic heating appliances, fuels and services.

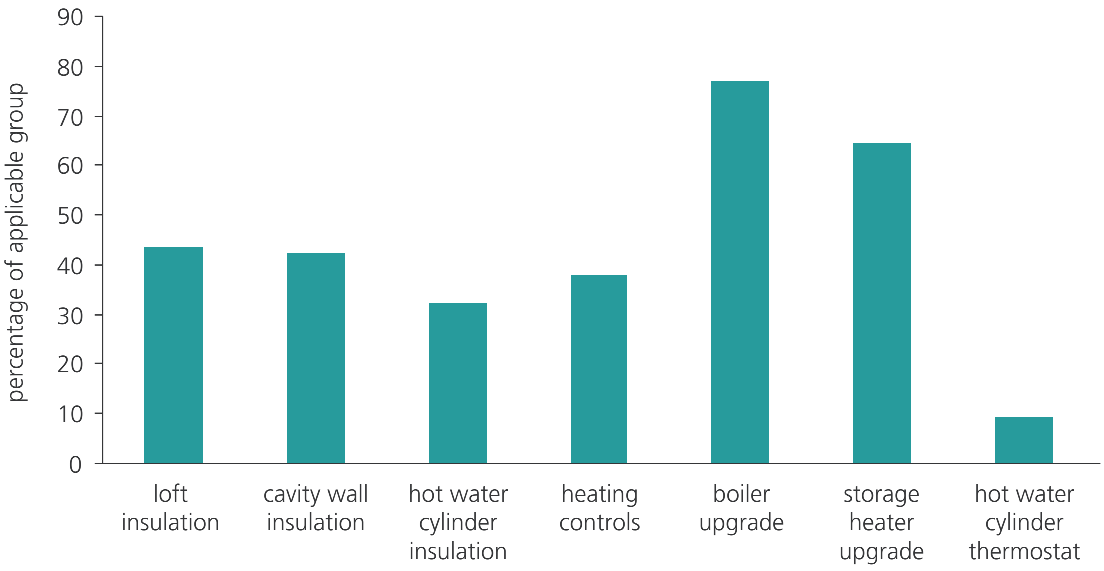
Table 6.1: EPC recommended energy efficiency measures, 2008

all dwellings

	size of applicable group (000s)	number of dwellings (000s) that would benefit from the measure	percentage of applicable group
low cost measures (less than £500)			
loft insulation	19,739	8,589	43.5
cavity wall insulation	15,491	6,537	42.2
hot water cylinder insulation	13,100	4,221	32.2
higher cost measures (more than £500)			
heating controls	19,514	7,410	38.0
boiler upgrade	19,298	14,912	77.3
storage heater upgrade	2,378	1,535	64.6
hot water cylinder thermostat	13,100	1,214	9.3
replacement warm air system	216	132	61.1
install biomass system	559	153	27.4
any measure	–	**20,095**	**90.4**
mean cost of measures per dwelling (£)	–	***£1,545***	–
total of measures cost (£billion)	–	***£31.05***	–

Note:
1) due to the small number of dwellings that replacing the warm-air unit could benefit this measure has been omitted from any further (post) improvement analysis in this chapter but it *has* been included in the post-improvement Energy Efficiency Rating/carbon dioxide emissions
2) the installation of a biomass boiler was assessed to identify the number of dwellings that would benefit from this measure but was *not* included in the post improvement energy efficiency rating or carbon dioxide emissions due a combination of the small amount of dwellings that would benefit and modelling complexity
3) costs at 2008 prices
Source: English Housing Survey 2008, dwelling sample

Figure 6.1: EPC recommended energy efficiency measures, 2008



Base: all dwellings
Note: underpinning data are presented in Table 6.1
Source: English Housing Survey 2008, dwelling sample

Tenure

6.6 The owner occupier sector represented 72% of all dwellings and therefore contained the largest number of dwellings that could benefit from each improvement measure. In all tenures, the top five improvements that would benefit the largest number of dwellings were always the same (boiler upgrades, loft insulation, cavity wall insulation, heating controls and hot water cylinder insulation), Table 6.2. Boiler upgrades was always the top measure, although the order of the other four measures varied.

Table 6.2: Number of dwellings that would benefit from EPC recommended energy efficiency measures by tenure, 2008

all dwellings

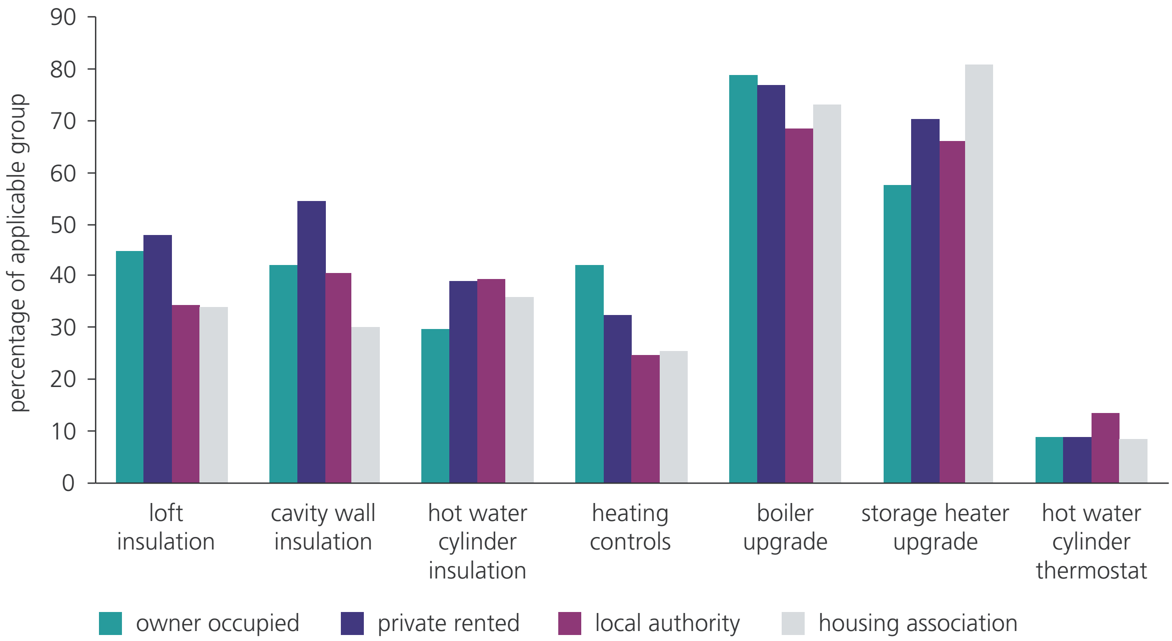
	owner occupied	private rented	local authority	housing association
				thousands of dwellings
low cost measures (less than £500)				
loft insulation	6,362	1,253	470	504
cavity wall insulation	4,494	967	602	474
hot water cylinder insulation	2,686	653	455	428
higher cost measures (more than £500)				
heating controls	5,767	832	411	399
boiler upgrade	10,708	1,955	1,116	1,134
storage heater upgrade	708	461	136	230
hot water cylinder thermostat	809	148	155	102
any measure	**13,801**	**2,967**	**1,664**	**1,663**
mean cost of measures per dwelling (£)	***£1,611***	***£1,476***	***£1,311***	***£1,359***
total cost of measures (£billion)	***£22.23***	***£4.38***	***£2.18***	***£2.26***

Note: costs at 2008 prices
Source: English Housing Survey 2008, dwelling sample

6.7 The private rented sector had the highest proportion of dwellings with the potential to install the low cost measures. Around half (49%) of all private rented dwellings with lofts and 56% of those with cavity walls could benefit from such works, Figure 6.2. The owner occupied sector had the greatest potential for upgrades to boilers and heating controls (79% and 42% respectively), largely because it had a higher proportion of dwellings with older central heating systems than the other tenures. Social sector dwellings had less potential for improvements to boilers, heating controls and loft and cavity wall insulation than those in the private sector; partly because many of these works had been carried out over the past ten years of the Decent Homes programme. However, social sector dwellings were more likely to be able to benefit from storage heater upgrades and works to hot water cylinders (insulation and thermostats) than private sector dwellings.

6.8 The average cost of carrying out all beneficial energy improvements was highest for owner occupied dwellings (around £1,600) and lowest for social housing (around £1,300 for local authority stock). The total cost of work for all social housing (local authority and housing association stock together) was comparable with that for the private rented sector (both £4.4 billion).

Figure 6.2: EPC recommended energy efficiency measures by tenure, 2008



Base: all applicable dwellings in each improvement category
Note: underpinning data are presented in Annex Table 6.1
Source: English Housing Survey 2008, dwelling sample

Dwelling age

6.9 In terms of sheer numbers, the stock that was built between 1965 and 1980 had the greatest potential for all of the listed improvements apart from a boiler upgrade where the numbers were higher for stock built before 1919 and between 1945 and 1964, Table 6.3. Part of the reason for variation lies in the construction type and built form of dwellings built at different times. For example, very few dwellings built before 1919 would benefit from cavity wall insulation because so few dwellings dating from this period were built with cavity walls. Similarly, the large numbers of dwellings built from 1965 onwards that would benefit from storage heater upgrades reflects the higher percentage of flats built at this time.

Table 6.3: Number of dwellings that would benefit from EPC recommended energy efficiency measures by construction date, 2008

all dwellings

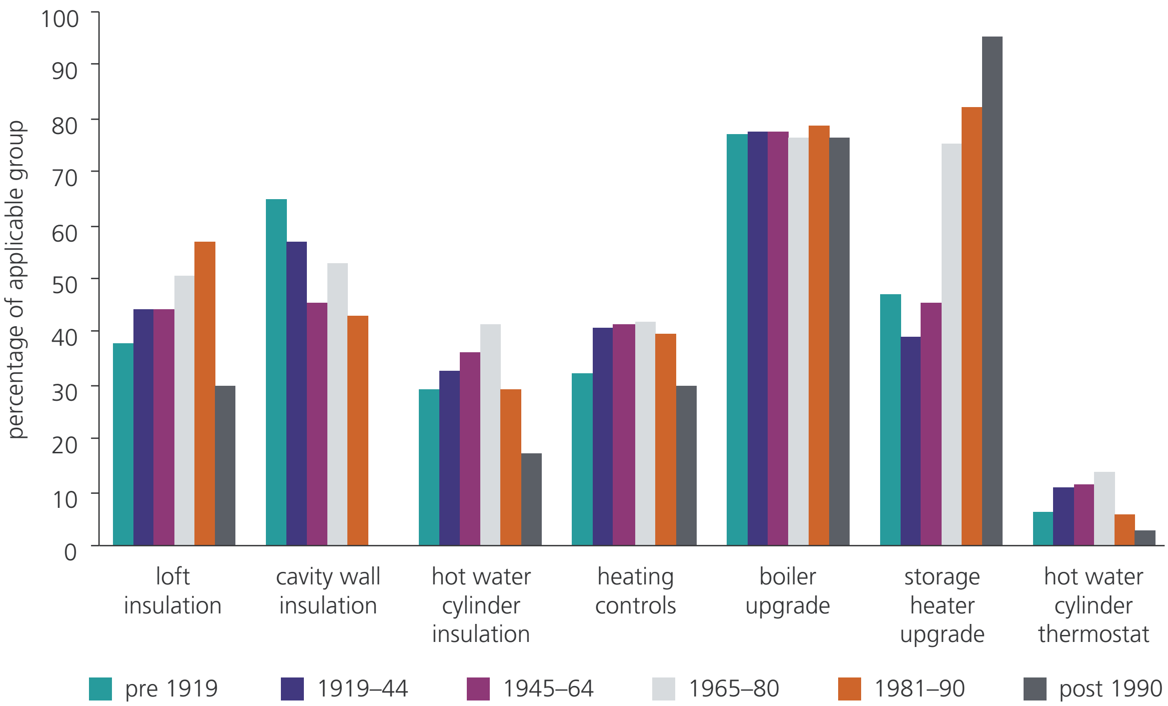
	pre 1919	1919–44	1945–64	1965–80	1981–90	post 1990
						thousands of dwellings
low cost measures (less than £500)						
loft insulation	1,621	1,524	1,749	2,055	950	690
cavity wall insulation	486	1,160	1,714	2,364	812	0
hot water cylinder insulation	664	602	938	1,275	418	324
higher cost measures (more than £500)						
heating controls	1,332	1,403	1,642	1,728	613	692
boiler upgrade	3,176	2,646	3,056	3,049	1,209	1,777
storage heater upgrade	280	75	167	390	289	333
hot water cylinder thermostat	145	200	297	434	84	54
any measure	**4,160**	**3,333**	**4,032**	**4,502**	**1,787**	**2,282**
mean cost of measures per dwelling (£)	***£1,484***	***£1,585***	***£1,605***	***£1,572***	***£1,640***	***£1,367***
total cost of measures (£billion)	***£6.17***	***£5.28***	***£6.47***	***£7.08***	***£2.93***	***£3.12***

Note: costs at 2008 prices
Source: English Housing Survey 2008, dwelling sample

6.10 There was far less potential to improve dwellings built after 1990 (with the exception of storage heater upgrades) than older dwellings; largely because the requirements for energy efficiency in the Building Regulations have become more stringent. However, it was not the case that the older the dwelling the more likely it was to benefit from these improvement measures. The only measure that showed this trend was cavity wall insulation, Figure 6.3. In fact, dwellings built before 1919 were less likely to be able to benefit from loft insulation, hot water cylinder insulation and improved heating controls than dwellings built between 1919 and 1980. For example, only 38% of pre 1919 dwellings could benefit from installing or topping up loft insulation, compared with 57% in those built in the 1980s. The potential for upgrading boilers was almost identical for stock of different ages and it was the newer stock (dating from 1965 or later) that was most likely to benefit from storage heater upgrades.

6.11 The average cost for carrying out cost effective energy improvements was lowest for the oldest (around £1,500) and newest (around £1,400) dwellings. For pre 1919 housing this reflects the more limited improvements that can be carried out.

Figure 6.3: EPC recommended energy efficiency measures by construction date, 2008



Base: all applicable dwellings in each improvement category
Note: underpinning data are presented in Annex Table 6.2
Source: English Housing Survey 2008, dwelling sample

Dwelling type

6.12 Semi-detached houses were the most common type of dwelling in England and the largest numbers of dwellings that could benefit from most measures were of this type. Some 4.2 million semi-detached houses could benefit from a boiler upgrade, 2.5 million from improved heating controls and 2.4 million from (additional) loft insulation, Table 6.4.

6.13 Overall, houses were more likely to be able to benefit from improvements to heating controls and boiler upgrades whereas flats were more likely to be able to benefit from storage heater upgrades, Figure 6.4. Detached houses were less likely to benefit from the insulation measures (loft, wall and water cylinder) and hot water cylinder thermostats than other types of house but equally likely to benefit from improved heating controls and boiler upgrades. The dwellings that were most likely to benefit from (additional) loft insulation were bungalows.

6.14 The average cost of carrying out potential cost effective improvements was highest for detached houses (around £1,800), bungalows (around £1,700) and semi-detached houses (around £1,600) and lowest for flats.

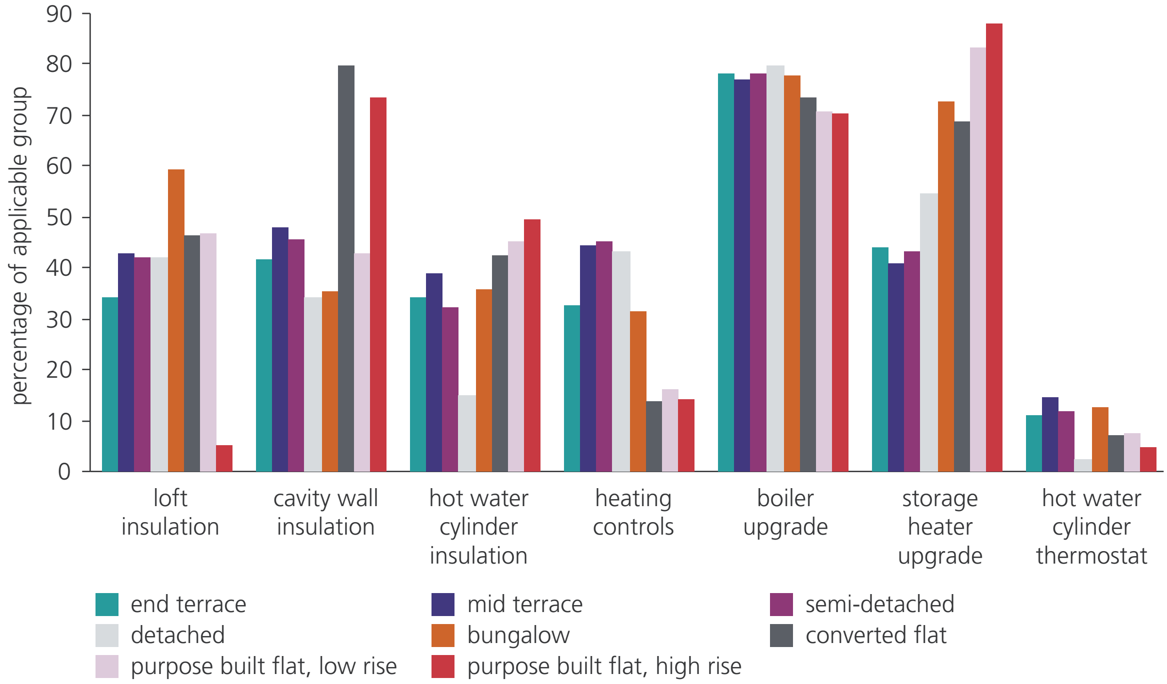
Table 6.4: Number of dwellings that would benefit from EPC recommended energy efficiency measures by dwelling type, 2008

all dwellings

	end terrace	mid terrace	semi-detached	detached	bungalow	converted flat	purpose built flat, low rise	purpose built flat, high rise
								thousands of dwellings
low cost measures (less than £500)								
loft insulation	756	1,782	2,442	1,621	1,238	190	557	2
cavity wall insulation	596	972	1,990	1,097	636	97	1,032	117
hot water cylinder insulation	423	781	1,070	440	467	142	776	123
higher cost measures (more than £500)								
heating controls	651	1,677	2,448	1,636	588	83	306	21
boiler upgrade	1,544	2,851	4,210	2,985	1,452	442	1,328	101
storage heater upgrade	85	155	151	50	143	126	727	98
hot water cylinder thermostat	135	291	395	65	165	24	127	12
any measure	**1,943**	**3,769**	**5,357**	**3,579**	**1,956**	**674**	**2,545**	**272**
mean cost of measures per dwelling (£)	***£1,529***	***£1,442***	***£1,617***	***£1,792***	***£1,702***	***£1,295***	***£1,209***	***£1,068***
total cost of measures (£billion)	***£2.97***	***£5.44***	***£8.67***	***£6.41***	***£3.33***	***£0.87***	***£3.08***	***£0.29***

Note: costs at 2008 prices
Source: English Housing Survey 2008, dwelling sample

Figure 6.4: EPC recommended energy efficiency measures by dwelling type, 2008



Base: all applicable dwellings in each improvement category
Note: underpinning data are presented in Annex Table 6.3
Source: English Housing Survey 2008, dwelling sample

Dwelling location

6.15 Over half (59%) of dwellings were located in suburban areas so it is not surprising that the largest number of dwellings that would benefit from potential improvements, some 12.0 million, were located these areas, Table 6.5.

Table 6.5: Number of dwellings that would benefit from EPC recommended energy efficiency measures by dwelling location, 2008

all dwellings

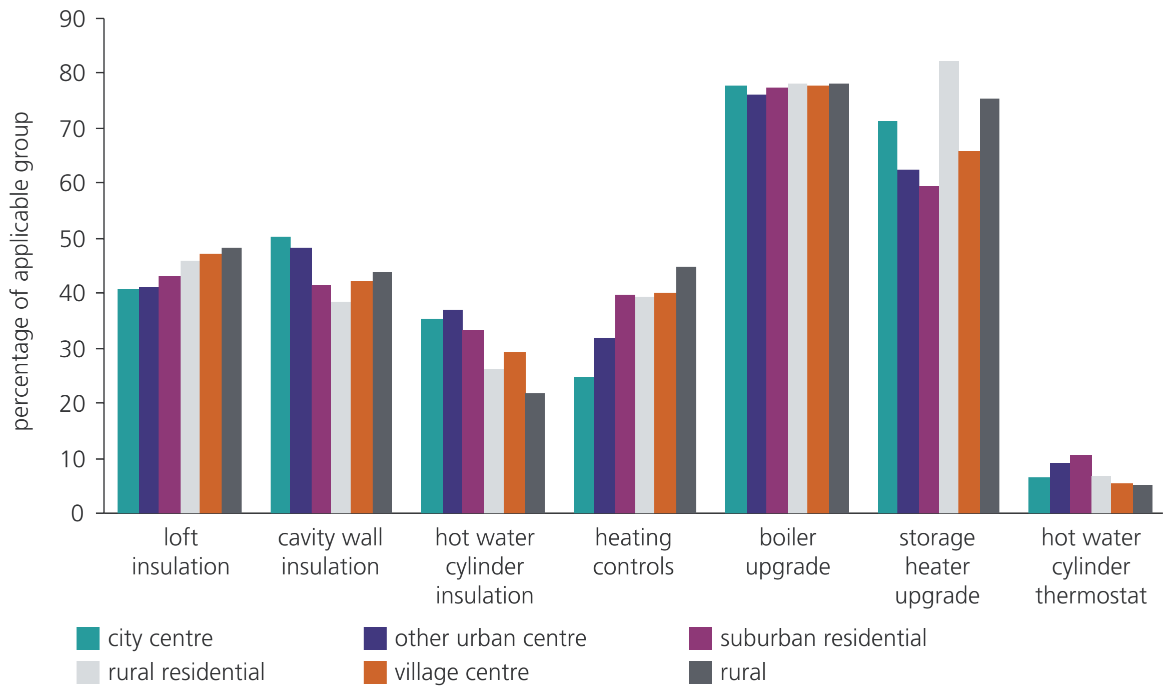
	city centre	other urban centre	suburban residential	rural residential	village centre	rural
						thousands of dwellings
low cost measures (less than £500)						
loft insulation	175	1,341	5,202	1,159	383	328
cavity wall insulation	150	1,039	4,196	794	224	134
hot water cylinder insulation	140	754	2,552	479	172	124
higher cost measures (more than £500)						
heating controls	120	1,134	4,711	914	273	258
boiler upgrade	375	2,686	9,070	1,806	528	447
storage heater upgrade	121	339	685	219	93	78
hot water cylinder thermostat	26	183	821	125	32	28
any measure	**600**	**3,719**	**11,971**	**2,399**	**776**	**630**
mean cost of measures per dwelling (£)	***£1,303***	***£1,398***	***£1,527***	***£1,740***	***£1,681***	***£2,080***
total cost of measures (£billion)	***£0.78***	***£5.20***	***£18.28***	***£4.17***	***£1.30***	***£1.31***

Note: costs at 2008 prices
Source: English Housing Survey 2008, dwelling sample

6.16 Dwellings in generally rural areas were more likely to be able to benefit from (additional) loft insulation, improved heating controls and storage heater upgrades and less likely to benefit from cavity wall insulation and improvements to hot water cylinders (insulation and thermostats) than those in generally urban locations (city centres and other urban centres). Dwellings in suburban areas were the least likely to be able to benefit from storage heater upgrades and most likely to derive benefit from installing a hot water thermostat. However, the proportion of dwellings that could benefit from a boiler upgrade was very similar in all types of area, Figure 6.5.

6.17 The average cost of potential improvements was highest in rural areas (and around £2,100 among more isolated rural housing) and lowest in city (around £1,300) and other urban centres (£1,400).

Figure 6.5: EPC recommended energy efficiency measures by dwelling location, 2008



Base: all applicable dwellings in each improvement category
Note: underpinning data are presented in Annex Table 6.4
Source: English Housing Survey 2008, dwelling sample

Level of local area deprivation

6.18 The potential for installing the different energy upgrades also varied with area deprivation; partly because of the high proportion of social housing and flats in the more deprived locations. The largest number of dwellings that could benefit from loft insulation, cavity wall insulation, improved heating controls and boiler upgrades were in the least deprived 10% of areas, Table 6.6.

6.19 Dwellings in the least deprived areas had much greater potential for installing or topping up loft insulation than those in the most deprived (50% compared with 34%). In contrast, dwellings in the most deprived areas had the highest potential for improvements to hot water cylinder insulation and cylinder thermostats, Figure 6.6.

6.20 The average cost of carrying out the potential improvements increased as the areas became less deprived from around £1,300 in the most deprived areas to approaching £1,700 in the least deprived areas.

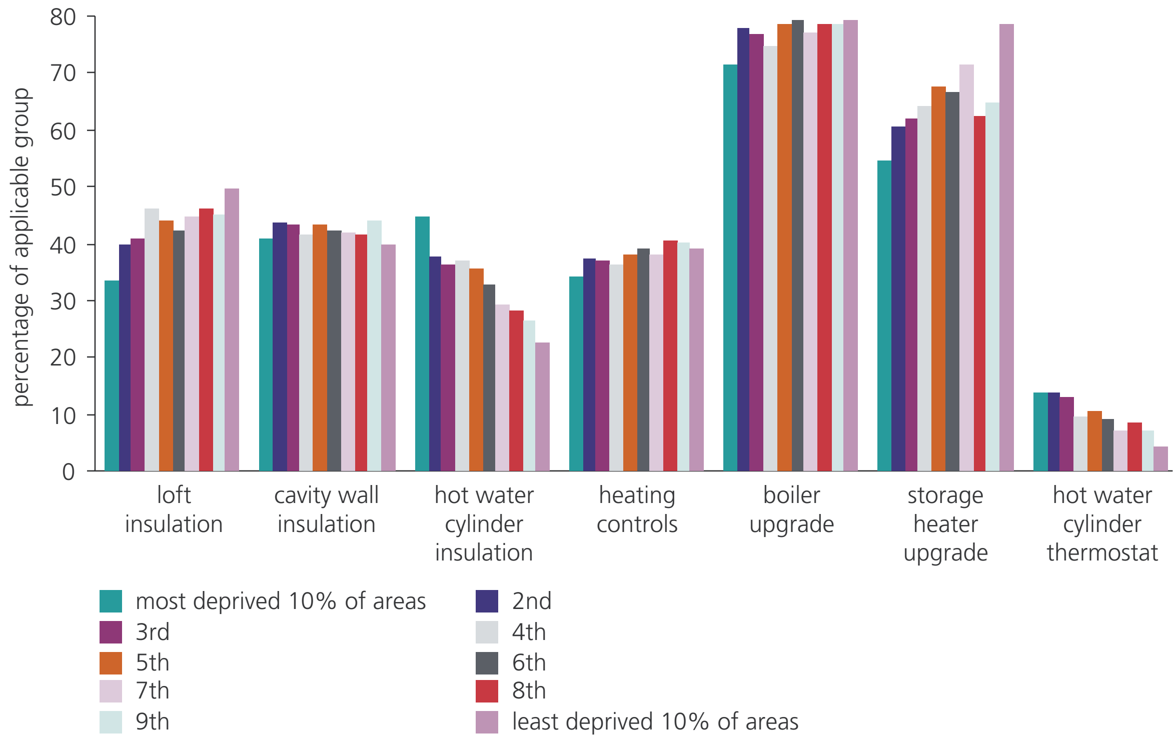
Table 6.6: Number of dwellings that would benefit from EPC recommended energy efficiency measures by extent of local area deprivation, 2008

all dwellings

	most deprived 10% of areas	2nd	3rd	4th	5th	6th	7th	8th	9th	least deprived 10% of areas
										thousands of dwellings
low cost measures (less than £500)										
loft insulation	564	728	761	917	873	847	948	993	928	1,030
cavity wall insulation	556	630	614	623	656	625	680	694	729	731
hot water cylinder insulation	434	432	391	465	471	440	423	420	396	350
higher cost measures (more than £500)										
heating controls	633	738	697	698	713	748	777	823	793	791
boiler upgrade	1,297	1,530	1,430	1,425	1,465	1,502	1,559	1,579	1,539	1,586
storage heater upgrade	139	146	176	200	200	165	163	142	108	96
hot water cylinder thermostat	132	159	141	120	140	123	102	126	107	64
any measure	**1,842**	**2,033**	**1,971**	**2,064**	**2,020**	**2,001**	**2,084**	**2,093**	**1,991**	**1,996**
mean cost of measures per dwelling (£)	***£1,338***	***£1,471***	***£1,457***	***£1,470***	***£1,589***	***£1,566***	***£1,595***	***£1,621***	***£1,662***	***£1,666***
total cost of measures (£billion)	***£2.46***	***£2.99***	***£2.87***	***£3.03***	***£3.21***	***£3.13***	***£3.32***	***£3.39***	***£3.31***	***£3.33***

Note:
1) costs at 2008 prices
2) the level of area deprivation is based on Census lower level Super Output Areas ranked by the 2007 Index of Multiple Deprivation and grouped in to ten equal numbers of areas
Source: English Housing Survey 2008, dwelling sample

Figure 6.6: EPC recommended energy efficiency measures by extent of area deprivation, 2008



Base: all applicable dwellings in each improvement category
Note:
1) underpinning data is presented in Annex Table 6.5
2) the level of area deprivation is based on Census lower level Super Output Areas ranked by the 2007 Index of Multiple Deprivation and grouped in to ten equal numbers of areas
Source: English Housing Survey 2008, dwelling sample

Post-improvement performance

6.21 If all of the potential cost effective measures[21] were installed, the mean SAP rating for the stock would rise by almost 12 points to 63, which would be a change similar to that seen between the early 1990s and 2008.[22] On the basis of 2005 energy prices, this would result in a potential 24% reduction in the heating, lighting and ventilation costs of average fuel bills for all households (from £611 to £464 at 2005 prices)[23]. Across the whole stock, the CO_2 emissions would fall on average by 1.6 tonnes/year (from 6.3 to 4.7 tonnes/year), Table 6.7. This would result in a total saving of 35.6 million tonnes of CO_2 (or 26% of total emissions accounted for by the housing stock under the standard occupancy and heating patterns used to assess stock performance).[24]

[21] Excluding the installation of a manual feed biomass boiler or wood pellet stove where an independent, non-biomass solid fuel system exists. This measure was *not* included in the post improvement energy efficiency rating or carbon dioxide emissions due to a combination of the small number of dwellings that would benefit and modelling complexity.

[22] However, the 12 point improvement would be a more significant gain than that achieved in the preceding 16 years because it is more difficult to improve the SAP rating at the higher end of its scale.

[23] Again, it is important to emphasise that such cost savings are dependent on actual occupancy and consumption behaviours.

[24] It is important to emphasise that actual emissions would not necessarily reduce by this amount, as the actual occupancy and consumption behaviours of households mediate between the potential performance of the housing stock and their emissions and costs.

Table 6.7: Potential improvements in energy efficiency (SAP) ratings, CO_2 emissions and fuel costs by tenure, 2008

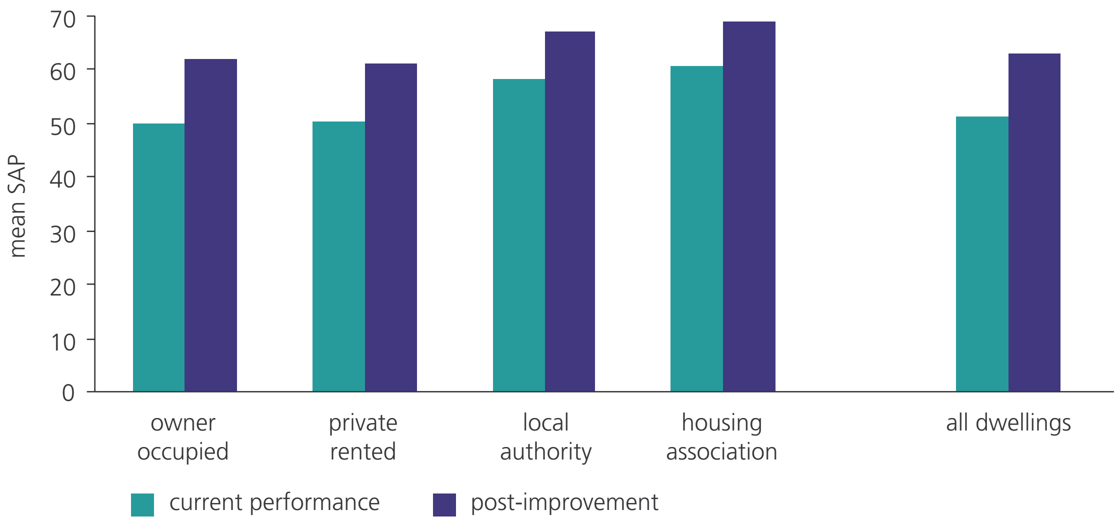
all dwellings

	current			post-improvement			difference		
	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP increase (rating)	CO_2 (tonnes/ year)	cost saving (£/year)
owner occupied	49.6	7.0	671	62.0	5.1	504	12.4	1.9	167
private rented	50.2	5.7	573	61.1	4.5	443	10.9	1.3	130
local authority	58.0	4.1	417	67.0	3.2	331	9.0	0.9	86
housing association	60.3	4.0	404	68.7	3.2	322	8.3	0.8	81
all dwellings	**51.4**	**6.3**	**611**	**62.9**	**4.7**	**464**	**11.5**	**1.6**	**147**

Source: English Housing Survey 2008, dwelling sample

6.22 However, some parts of the stock would see more improvement than others. Looking first at energy efficiency, the owner occupied sector would improve its mean SAP rating by twelve SAP points, in comparison to eight SAP points in the housing association sector, Table 6.7 and Figure 6.7.

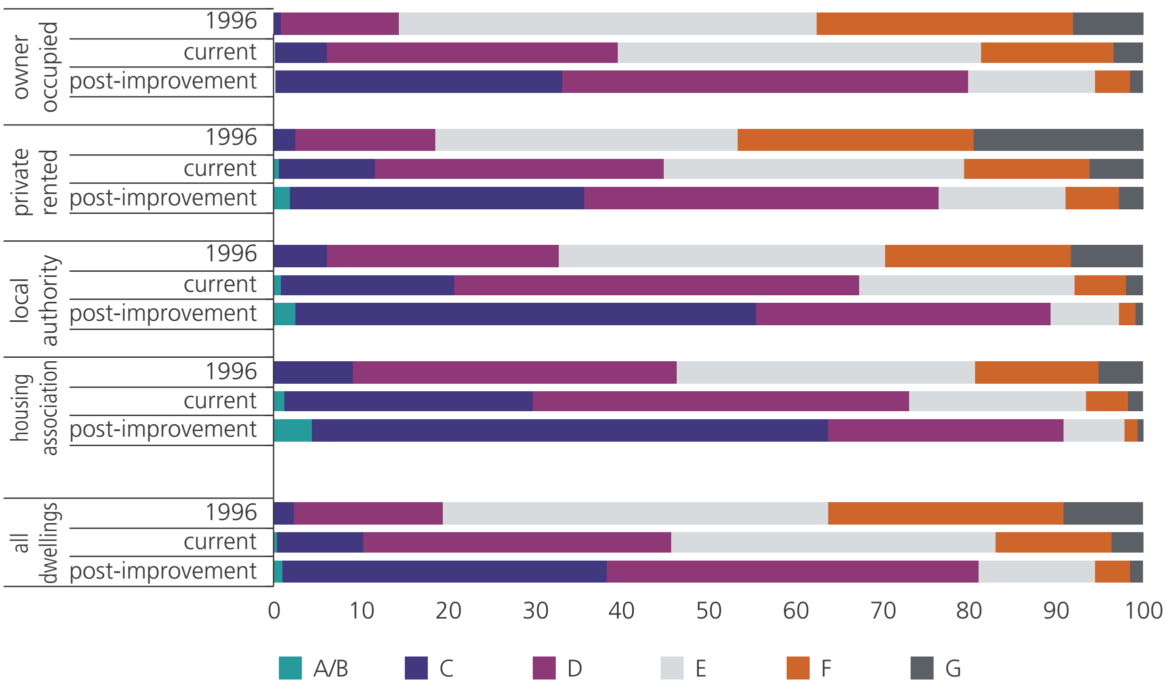
Figure 6.7: Potential improvement in mean energy efficiency (SAP) ratings after recommended improvements by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Table 6.7
Source: English Housing Survey 2008, dwelling sample

6.23 From 1996 to 2008 there were significant improvements in energy efficiency with the percentage of dwellings in the more efficient Bands B and C increasing from 2% to 10% and the proportion in the least efficient Bands E to G reducing from 81% to 54%, Figure 6.8. However, applying the relatively straightforward EPC measures would bring about a similar level of improvement to the 2008 position. By installing all of the applicable measures, the number of dwellings in Bands B and C would more than double and the percentage in the least efficient Bands E to G would reduce from 54% to 19%. The majority of housing association dwellings would fall into Bands B and C and the proportion of owner occupied dwellings in the most inefficient Bands E to G would fall from 61% to just 20% of the sector.

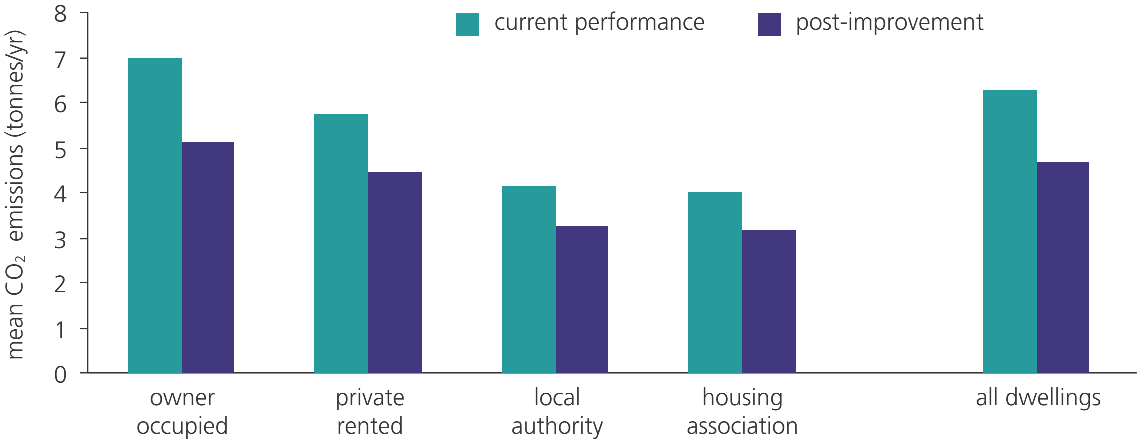
Figure 6.8: Mean Energy Efficiency Rating Bands – 1996, current and post-improvement performance by tenure, 2008



Base: all dwellings
Note: underpinning data are presented in Annex Table 6.6
Source: English House Condition Survey 1996, English Housing Survey 2008, dwelling sample

6.24 If the EPC recommended measures were implemented, CO_2 emissions would reduce by some 27% in the owner occupied sector compared with 20% for housing association dwellings. However, in absolute terms, the potential gain from the owner occupied sector would be more than twice that of the housing association sector (1.9 tonnes/year/dwelling compared with 0.8 tonnes/year/dwelling), Table 6.7.

Figure 6.9: Potential improvement in mean CO_2 emissions after recommended improvements by tenure, 2008



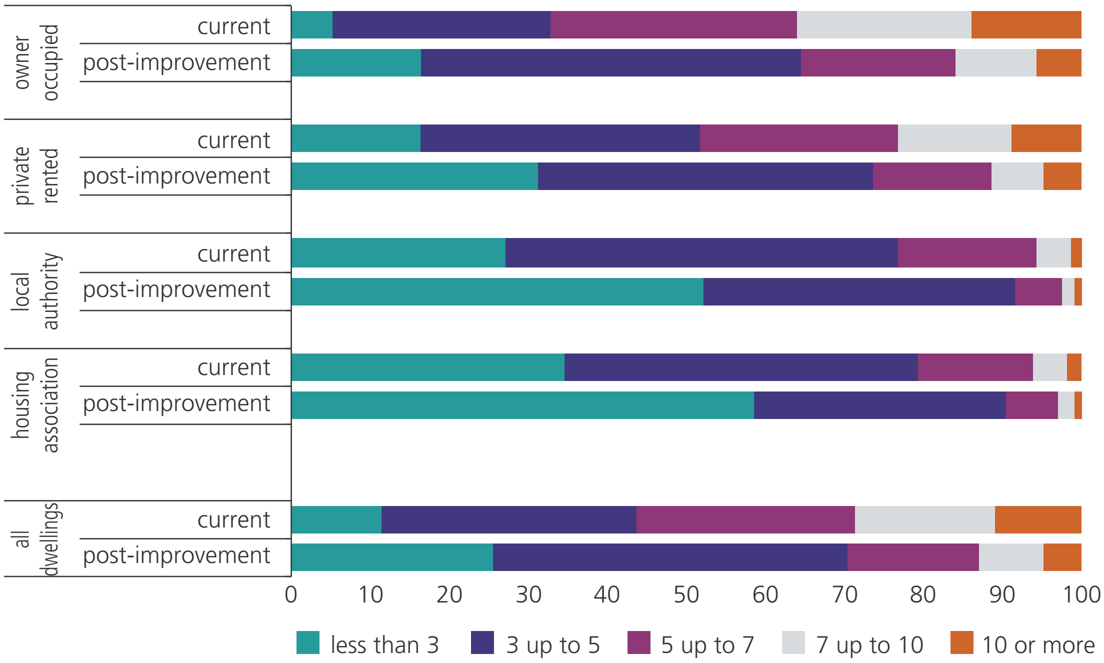
Base: all dwellings
Note: underpinning data are presented in Table 6.7
Source: English Housing Survey 2008, dwelling sample

6.25 Across the stock as whole the proportion of dwellings notionally emitting less than three tonnes/year of CO_2 would more than double (from 11% to 26% of the housing stock) while the proportion emitting seven or more tonnes/year would be cut by more than half (from 29% to 13%). The vast majority (90%) of housing association dwellings and almost two thirds (64%) of those in the owner occupied sector would emit less than five tonnes/year.

6.26 The greatest scope for improvement was in the housing stock built before 1980, Table 6.8. Carrying out the cost effective upgrades identified in the previous section could, on average, improve the energy efficiency of this stock by around 11 to 13 SAP points and reduce CO_2 emissions by 22–29% (1.6 to 2.0 tonnes/year).

6.27 The potential improvement in SAP ratings in pre 1919 dwellings was relatively modest (from an average of 42 to 53) because the straightforward cost effective measures cannot always be applied to these dwellings. A much higher than average proportion of these older dwellings have solid walls or are without access to mains gas, so more costly measures are needed to make more significant improvements. Nevertheless, installing the straightforward cost effective measures would substantially reduce the very high CO_2 emissions in these dwellings from an average of 8.5 tonnes/year to 6.7 tonnes/year.

Figure 6.10: Mean carbon dioxide (CO_2) emissions (tonnes/year) – current and post-improvement performance by tenure, 2008



Base: all dwellings
Note: underpinning data is presented in Annex Table 6.7
Source: English Housing Survey 2008, dwelling sample

Table 6.8: Potential improvements in energy efficiency (SAP) ratings, CO_2 emissions and fuel costs by dwelling age, 2008

all dwellings

	current			post-improvement			difference		
	SAP (rating)	**CO_2 (tonnes/ year)**	**cost (£/year)**	**SAP (rating)**	**CO_2 (tonnes/ year)**	**cost (£/year)**	**SAP increase (rating)**	**CO_2 (tonnes/ year)**	**cost saving (£/year)**
pre 1919	42.2	8.5	816	53.1	6.7	645	10.9	1.9	171
1919–44	46.9	7.0	666	60.3	5.0	493	13.4	2.0	173
1945–64	50.9	5.9	577	64.1	4.2	420	13.2	1.7	157
1965–80	53.9	5.5	540	66.5	3.9	394	12.6	1.6	147
1981–90	57.3	4.9	500	67.1	3.8	387	9.8	1.2	113
post 1990	65.5	4.2	433	72.1	3.4	356	6.5	0.8	77
all dwellings	**51.4**	**6.3**	**611**	**62.9**	**4.7**	**464**	**11.5**	**1.6**	**147**

Source: English Housing Survey 2008, dwelling sample

6.28 Houses of all types showed greater potential for improvement than flats; especially semi-detached and detached dwellings which would see an increase in mean SAP rating of 13 points and a 28% reduction in CO_2 emissions, Table 6.9. High rise flats had the smallest potential improvement (8 SAP points and 0.6 tonnes of CO_2) largely because a relatively small proportion of these flats have lofts, cavity walls or central heating systems.

Table 6.9: Potential improvements in energy efficiency (SAP) ratings, CO_2 emissions and fuel costs by dwelling type, 2008

all dwellings

	current			post-improvement			difference		
	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP increase (rating)	CO_2 (tonnes/ year)	cost saving (£/year)
end terrace	48.8	6.2	607	60.5	4.7	466	11.7	1.5	141
mid terrace	55.1	5.2	517	65.1	4.0	405	10.0	1.2	112
semi detached	48.7	6.7	639	61.8	4.8	476	13.1	1.8	163
detached	48.0	9.6	904	60.7	7.0	675	12.7	2.7	229
bungalow	46.5	6.0	587	59.8	4.4	436	13.3	1.6	152
converted flat	44.8	5.8	592	54.9	4.8	475	10.1	1.0	117
purpose built flat, low rise	61.8	3.3	355	70.2	2.7	282	8.4	0.6	73
purpose built flat, high rise	61.2	3.5	376	69.0	3.0	302	7.7	0.6	74
all dwellings	**51.4**	**6.3**	**611**	**62.9**	**4.7**	**464**	**11.5**	**1.6**	**147**

Source: English Housing Survey 2008, dwelling sample

6.29 Dwellings in suburban and generally rural areas would see their mean SAP rating increase by between 12 and13 points compared with an increase of 10 points in city and other urban centre areas, although the mean SAP rating for dwellings in isolated rural areas and village centres would still be well below that for the stock as a whole (45 and 56 compared with a stock average of 63). However, because dwellings in more rural areas tended to be larger, there would be substantial mean reductions in CO_2 emissions (a saving of 3.3 tonnes/ year compared with 1.0 tonnes/year in city centre dwellings), Table 6.10. Dwellings in suburban areas would see a 27% reduction in CO_2 emissions (from 5.8 tonnes/year to 4.2 tonnes/year).

6.30 The biggest improvements would be seen for dwellings in the least deprived areas because these had the highest CO_2 emissions before improvements and the highest potential for installing many of the improvement measures, Table 6.11. Dwellings in the least deprived 10% of areas could improve their mean SAP rating by 13 points and reduce their CO_2 emissions by 29% (from 7.2 tonnes/year to 5.1 tonnes/year). In contrast the mean SAP rating for dwellings in the most deprived areas would increase by 9 points and CO_2 emissions reduce by 22% (from 4.6 tonnes/year to 3.6 tonnes/year).

Table 6.10: Potential improvements in energy efficiency (SAP) ratings, CO_2 emissions and fuel costs by dwelling location, 2008

all dwellings

	current			post-improvement			difference		
	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP increase (rating)	CO_2 (tonnes/ year)	cost saving (£/year)
city centre	51.6	5.2	542	61.7	4.2	422	10.1	1.0	120
other urban centre	53.1	5.5	543	63.3	4.2	425	10.1	1.3	118
suburban residential	53.0	5.8	565	64.6	4.2	426	11.7	1.5	140
rural residential	48.0	7.5	718	60.6	5.5	538	12.6	2.0	180
village centre	43.3	9.0	845	55.6	6.8	647	12.3	2.2	199
rural	32.6	13.7	1,273	45.3	10.4	976	12.8	3.3	297
all dwellings	**51.4**	**6.3**	**611**	**62.9**	**4.7**	**464**	**11.5**	**1.6**	**147**

Source: English Housing Survey 2008, dwelling sample

Table 6.11: Potential improvements in energy efficiency (SAP) ratings, CO_2 emissions and fuel costs by extent of local area deprivation, 2008

all dwellings

	current			post-improvement			difference		
	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP (rating)	CO_2 (tonnes/ year)	cost (£/year)	SAP increase (rating)	CO_2 (tonnes/ year)	cost saving (£/year)
most deprived 10% of areas	56.2	4.6	466	65.7	3.6	368	9.4	1.0	98
2nd	54.9	5.0	496	65.3	3.8	383	10.5	1.2	113
3rd	52.8	5.4	537	63.6	4.1	415	10.8	1.3	122
4th	51.3	5.9	580	62.3	4.5	446	11.0	1.4	133
5th	49.7	6.5	630	61.4	4.9	478	11.7	1.7	152
6th	49.2	6.8	658	61.4	5.0	497	12.2	1.8	161
7th	49.4	7.0	677	61.4	5.2	512	12.0	1.8	164
8th	49.0	7.1	684	61.3	5.2	516	12.3	1.9	168
9th	49.6	7.3	696	62.3	5.3	520	12.7	2.0	176
least deprived 10% of areas	51.7	7.2	683	64.3	5.1	504	12.6	2.1	179
all dwellings	**51.4**	**6.3**	**611**	**62.9**	**4.7**	**464**	**11.5**	**1.6**	**147**

Note: the level of area deprivation is based on Census lower level Super Output Areas ranked by the 2007 Index of Multiple Deprivation and grouped in to ten equal numbers of areas
Source: English Housing Survey 2008, dwelling sample

Chapter 7
Disparities in living conditions

This chapter brings together indicators of poor housing addressed in the report and looks at them in the specific context of how far disparities of conditions exist for particular groups of households and the extent to which such disparities are related to low income. The groups focused on are: a) households that include people who may be considered 'vulnerable' on account of their age, long term illness or disability and b) ethnic minority households. Households in these groups who are also in poverty are of particular interest as they tend to have more limited opportunities and capacities to improve their own housing conditions.

The chapter is organised to look firstly at the overall relationship of income to poor housing conditions. It then goes on to look at the extent to which different types of vulnerable and minority households experience a range of poor housing conditions and to what extent poverty increases this likelihood. It looks finally at the extent to which improvements in the energy efficiency and state of repair of housing of the poorest households has matched those of the richest households.

Key findings

- **The relationship between poor housing and household income is not straightforward. Generally, while lower income was related to increased likelihood of living in homes in serious disrepair, with serious problems of condensation or mould and in neighbourhoods with worst upkeep problems, it made no clear impact on the likelihood of households living in homes with HHSRS excess cold or falls hazards.**
- **Children growing up in poor households are more likely to experience a range of problems in their living conditions. Almost one third of households with children in local authority housing were experiencing the worst neighbourhood upkeep problems (related to anti-social and criminal behaviours as well as poor maintenance). Around one third of households with children in private rented accommodation were being raised in homes in serious disrepair.**
- **Older people (aged 60 years or more) tend to be more vulnerable to cold and were found to be more likely than others to live in homes that were difficult to heat. The risk of living in homes with an excess cold hazard increased substantially for all households who had been resident in their current accommodation for thirty or more years.**

Long term resident older households were also much more likely to live in homes in serious disrepair compared to those who had moved during the previous twenty years.

- **The chances of experiencing such poor living conditions were also strongly dependent on older people's housing tenure. Those older households privately renting were almost six times more likely to live in a difficult to heat home than their counterparts in social housing irrespective of their poverty status (24% compared to 4%). Older home owners (11%) were also nearly three times more likely to experience such conditions as those in social housing.**
- **Older households privately renting were also more than three times more likely to live in homes in serious disrepair than their counterparts in other tenures (27% compared to 8% for those renting social housing or in owner occupation).**
- **While overall households with long term ill or disabled people were not disproportionately likely to experience poor living conditions, those in poverty were much more likely to do so than others with higher incomes.**
- **Compared to white households, ethnic minority households were much more likely to be living in homes in serious disrepair, with serious problems of damp related to condensation and in worst neighbourhoods. More than one in four poor ethnic minority households were living in neighbourhoods with worst upkeep problems.**
- **There was substantial improvement in the energy efficiency and state of repair of housing for all income groups in recent years. Improvement for the poorest fifth of households was comparable with that for the fifth of households with highest income. In consequence the poorest fifth of households on average continued to live in homes that were more energy efficient but had a higher level of disrepair than those of their more affluent peers.**

'Poor housing' and household income

7.1 The range of poor condition indicators considered in this chapter is set out in Box 1. The household income measure used in this chapter is 'equivalised' income before housing costs are taken into account. Equivalised household income recognises that, for example, a household of three people requires a higher income than a one person household to achieve the same standard of living. Accordingly an equivalence scale (the modified OECD scale) is employed, taking each household's size and composition into account, to make sensible comparisons.[25]

[25] The approach used in the English Housing Survey follows that for Households Below Average Income reporting. An explanation of this approach and its terms, including the use of modified OECD scale to achieve equivalence, is provided in Appendix 1 (Glossary) and Appendix 2 (Methodology) of the Households Below Average Income Report 2008–09 available from the following web address: http://statistics.dwp.gov.uk/asd/hbai/hbai_2009/index.php?page=appendices.

Box 1: Poor housing conditions

HHSRS excess cold: homes with a Category 1 hazard relating to excess cold which, for the survey, is assessed as those with a SAP rating below 35.[26]

HHSRS any falls: homes with a Category 1 hazard related to falls on stairs, on level surfaces, between levels or from baths.

HHSRS other hazards: homes with any other Category 1 hazards (see glossary for full list).

Serious disrepair: dwellings with basic disrepair costs of more than £25/m^2.

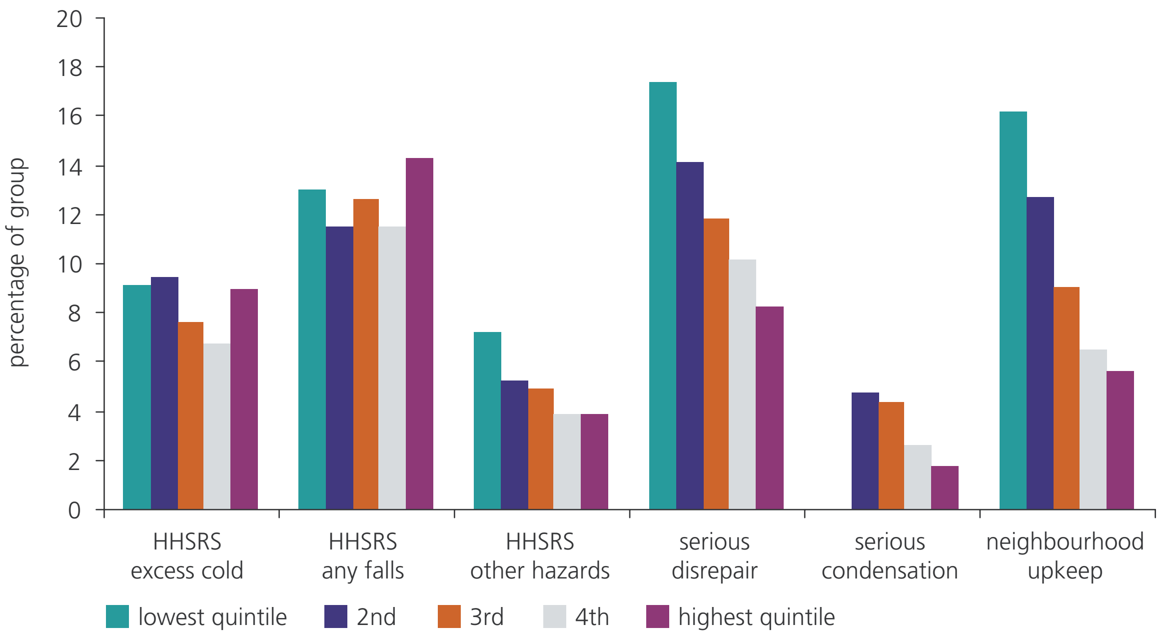
Serious condensation or mould: presence of either resulting from water vapour (from cooking, bathing etc) condensing on cold surfaces in the home.[27]

Worst neighbourhood upkeep problems: the 10% of households whose 'neighbourhoods' (the public and private space/buildings in the immediate environment of the dwelling) appear to be most neglected, poorly maintained and/or vandalised.

7.2 The relationship between poor housing and household income is not straightforward. While lower income is related to increased likelihood of living in 'poor housing' on some measures, this does not hold true for all, Figure 7.1. The poorest were much more likely to live in homes in serious disrepair or with problems of serious condensation and mould or in neighbourhoods with worst upkeep problems. Households who made up the poorest fifth were more than twice as likely to live in homes with serious disrepair as the wealthiest fifth (17% compared to 8% respectively) and three times more likely to live in homes with serious condensation or mould or in neighbourhoods with worst upkeep problems.

[26] The survey threshold of 'below SAP 35' for HHSRS excess cold is based on the SAP 2001 methodology. The equivalent under SAP 2005 is assessed to be a rating below 31.49.
[27] The survey assessment of serious condensation or mould is to be differentiated from the HHSRS Category 1 hazard for damp and mould which also includes severe problems arising from penetrating and rising damp.

Figure 7.1: Poor housing conditions by household income, 2008



Base: all households
Note:
1) underpinning data are presented in Annex Table 7.1
2) for definitions of poor housing conditions in this figure refer to Box 1 in this chapter
Source: English Housing Survey 2008, household sub-sample

7.3 However with regard to problems assessed through the HHSRS there is no clear relationship between household income and Category 1 excess cold or falls hazards. The homes of the wealthiest fifth of households were at least as likely to have present excess cold or any falls hazards as the poorest fifth. Poorer households were only more likely to be exposed to 'other hazards' – a wide range of less frequently occurring hazards.

7.4 One key reason for this complexity is the strong association of HHSRS hazards to the age and original design, construction features and built form of dwellings (see Chapter 4). The tendency for the poorest households to live in flats and in smaller post-war houses, with the most affluent households gravitating toward the oldest and newest larger properties creates a complex outcome in terms of the distribution of HHSRS hazards between higher and lower income groups.

Vulnerability, poverty and poor housing

7.5 This section looks at the extent to which households that may be particularly vulnerable to poor housing conditions are likely to occupy such homes and how far poverty increases this likelihood. Vulnerability to poor conditions is defined in this chapter by age (children and older people) and any long term illness or disability. The detailed categories are given in Box 2 below along with how poverty is defined for the purposes of this chapter.

Box 2: Vulnerability and poverty

Households with vulnerability to poor housing conditions

'with children 0–15': households that include at least one person aged under 16. These are further divided into lone parents and couple/multiperson households. Multiperson households with children include one or more parents and other adults outside of the family unit who may or may not be unrelated.

'older people 60+': households that include at least one person aged 60 or over

'illness or disability': households where the respondent indicates at least one person has a long-term illness or disability

Poverty

'in poverty': households with equivalised income below 60% of the median household income before housing costs (BHC) are taken into account.[28]

Households with children

7.6 Overall, households with children were almost twice as likely to be living in homes with serious condensation compared to other households (6% and 3% respectively) and were also more likely to be living in the worst neighbourhoods (12%) than households with no children (9%), Table 7.1. However, households with children were less likely to be living in cold homes than households without children, and serious disrepair was no more of a problem for households with children than those without.

[28] See Footnote 25 above.

Table 7.1: Households with children (0–15) by poor living conditions, 2008

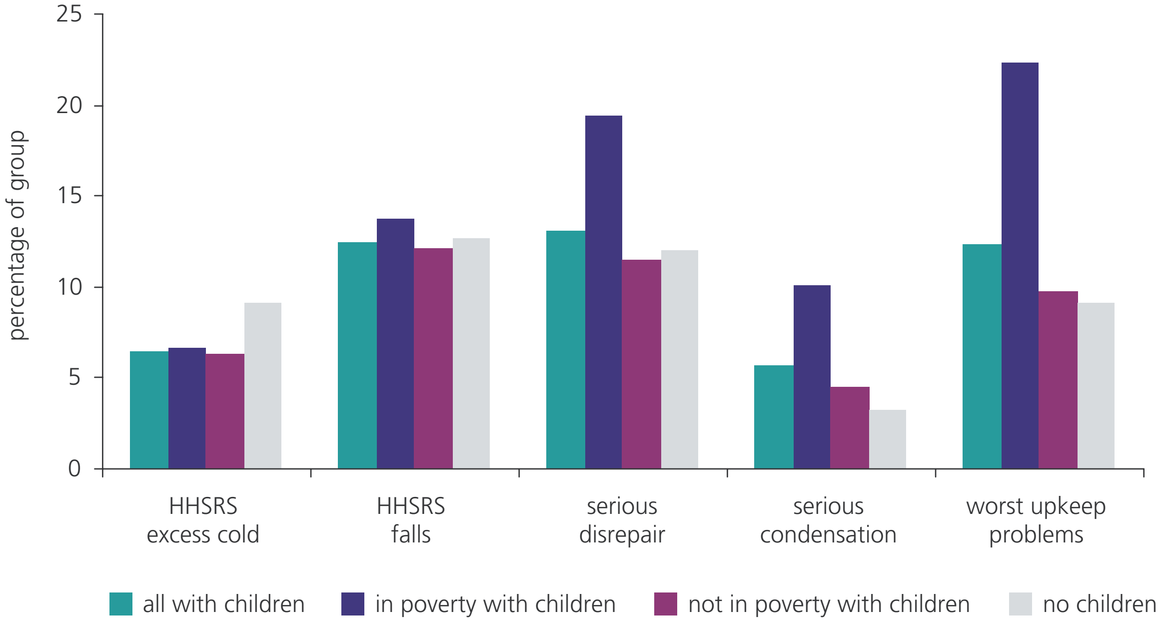
all households

	percentage of group living in homes with:					number of households (000s)
	HHSRS excess cold	HHSRS falls	serious disrepair	serious condens-ation	worst neighbour-hoods	
all households						
households with children:						
lone parent	4.5	12.3	17.3	7.0	19.8	1,241
couple or multi person household	7.0	12.5	12.0	5.3	10.2	4,475
all households with children	6.4	12.5	13.1	5.7	12.3	5,716
households with no children	9.1	12.6	12.1	3.3	9.2	15,691
all households	**8.4**	**12.6**	**12.3**	**3.9**	**10.0**	**21,407**
households in poverty						
households with children:						
lone parent	5.7	11.9	20.7	10.2	24.8	452
couple or multi person household	7.3	14.8	18.6	10.0	20.7	714
all households with children	6.7	13.7	19.4	10.1	22.3	1,166
households with no children	9.8	12.7	16.8	4.5	13.7	2,635
all households in poverty	**8.8**	**13.0**	**17.6**	**6.2**	**16.3**	**3,801**
households not in poverty						
households with children:						
lone parent	3.8	12.6	15.3	5.1	16.9	790
couple or multi person household	6.9	12.1	10.7	4.4	8.2	3,761
all households with children	6.4	12.2	11.5	4.6	9.7	4,550
households with no children	9.0	12.6	11.1	3.0	8.3	13,056
all households not in poverty	**8.3**	**12.5**	**11.2**	**3.4**	**8.6**	**17,606**

Source: English Housing Survey 2008, household sub-sample
Note: for definitions of poor housing conditions in this figure see Box 1 in this chapter.

7.7 Living in poverty substantially increased the likelihood of households with children living in homes in serious disrepair, with serious condensation problems or in neighbourhoods with the worst upkeep problems, Figure 7.2. Almost one in five (19% of) households with children who were in poverty were living in homes in serious disrepair compared to only 12% of households with children who were not in poverty. Poor households with children were twice as likely to have serious condensation problems in their homes as those not living in poverty (10% and 5% respectively). Those with children who were living in poverty were also more likely to be living in the worst neighbourhoods: 22% compared with 10% households with children who were not in poverty.

Figure 7.2: Households with children by poor living conditions and poverty status, 2008



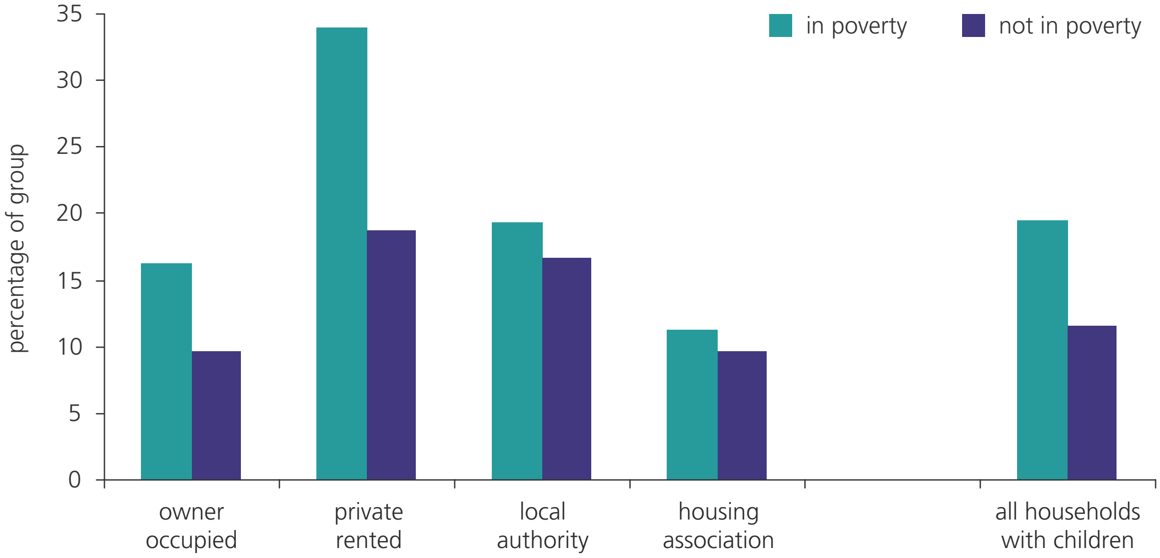
Base: all households with children
Note: underpinning data are presented in Table 7.1
Source: English Housing Survey 2008, household sub-sample

7.8 Chapter 4 indicated that serious condensation is particularly related to over crowding and the size of the dwelling. More than one in five over crowded households (the vast majority of which contain children) had problems of serious condensation in the home.

7.9 Households with children housed in the private rented sector were more likely to live in homes in serious disrepair than those in other tenures, but this was particularly the case for those in poverty, Figure 7.3. Disparities in disrepair between poorest and other households with children were least marked in social housing.

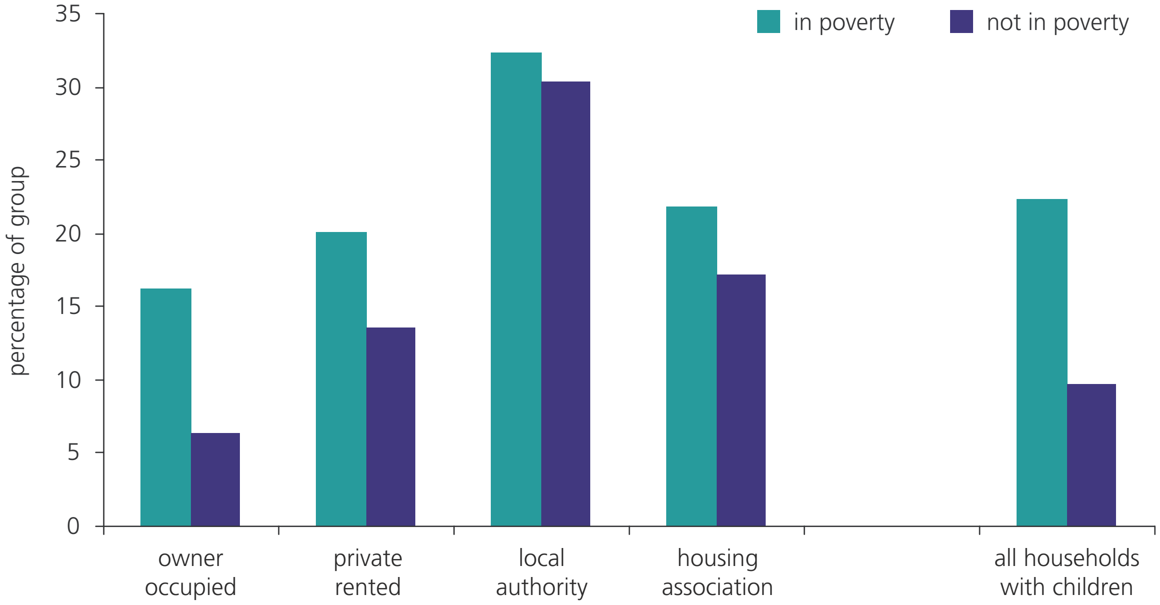
7.10 Households with children living in local authority accommodation were much more likely than those in other tenures to live in neighbourhoods with worst upkeep problems, albeit with a relatively small disparity within the sector between those in poverty and others, Figure 7.4. Although households with children who were owner occupiers or private tenants were less likely to live in such neighbourhoods the disparity between those in poverty and others within these sectors was much more marked.

Figure 7.3: Percentage of households with children living in homes in serious disrepair, by poverty status, 2008



Base: all households with children
Note: underpinning data are presented in Annex Table 7.2
Source: English Housing Survey 2008, household sub-sample

Figure 7.4: Percentage of households with children living in neighbourhoods with worst upkeep problems, by poverty status, 2008



Base: all households with children
Note: underpinning data are presented in Annex Table 7.3
Source: English Housing Survey 2008, household sub-sample

7.11 Lone parent households were more likely to be living in serious disrepair, (17%) compared to other households with children (12%). Serious condensation was also more likely to be a problem for lone parent households (7%) than for couple or multi-person households. Lone parents were twice as likely to live in the neighbourhoods with worst upkeep problems compared to other households with children (20% and10% respectively).

Older Households

7.12 Overall, older households, who are particularly vulnerable to the health effects of living in homes that are difficult to keep warm, were more likely to be living in homes comprising a HHSRS excess cold hazard than other households (10% compared to 7% respectively) Table 7.2. However on average they were less likely to be living in homes with any of the other poor living conditions considered in this chapter when compared to other ('younger') households.

Table 7.2: Households with older people (60+) by poor living conditions, 2008

all households

	percentage of group living in homes with:					number of households (000s)
	HHSRS excess cold	HHSRS falls	serious disrepair	serious condens-ation	worst neighbour-hoods	
all households						
households with older people:						
single householder	11.0	10.2	11.9	1.9	7.2	3,412
couple or multi person household	10.0	11.1	7.7	1.9	6.5	4,369
all households with older people	10.4	10.7	9.6	1.9	6.8	7,782
households with no older people	7.2	13.7	13.9	5.1	11.8	13,626
all households	**8.4**	**12.6**	**12.3**	**3.9**	**10.0**	**21,407**
households in poverty						
households with older people:						
single householder	11.7	11.5	14.8	2.3	8.3	784
couple or multi person household	11.7	11.0	11.7	2.9	7.6	747
all households with older people	11.7	11.3	13.2	2.6	7.9	1,531
households with no older people	6.9	14.2	20.5	8.7	22.0	2,270
all households in poverty	**8.8**	**13.0**	**17.6**	**6.2**	**16.3**	**3,801**
households not in poverty						
households with older people:						
single householder	10.8	9.8	11.1	1.8	6.9	2,628
couple or multi person household	9.7	11.1	6.9	1.7	6.3	3,622
all households with older people	10.1	10.6	8.6	1.7	6.5	6,251
households with no older people	7.3	13.6	12.6	4.3	9.8	11,355
all households not in poverty	**8.3**	**12.5**	**11.2**	**3.4**	**8.6**	**17,606**

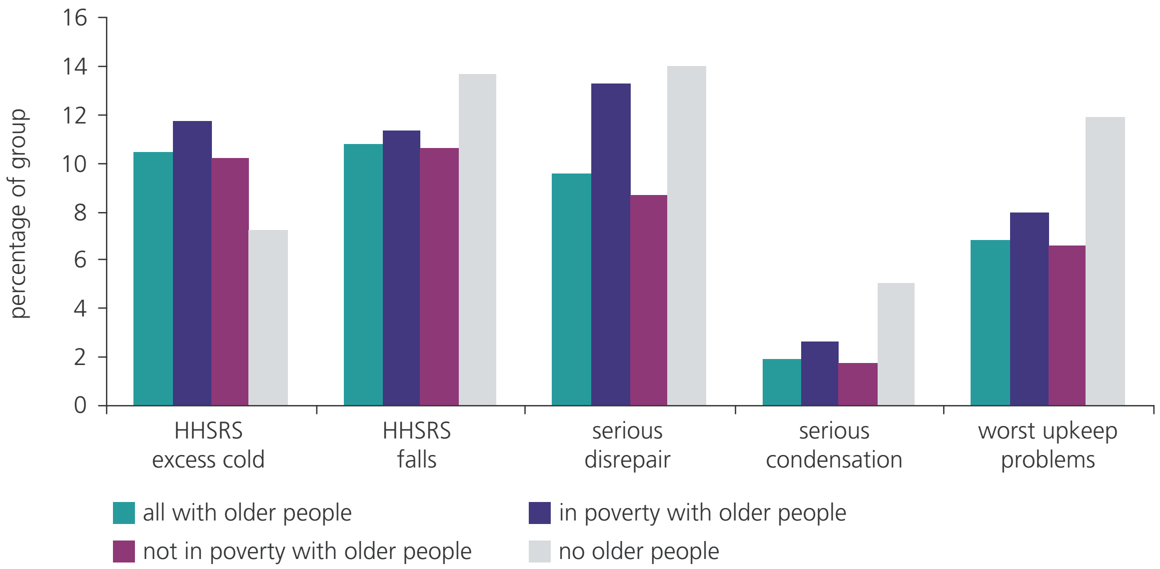
Source: English Housing Survey 2008, household sub-sample

7.13 While households with anyone over the age of 60 are less likely than 'younger' households to be living in homes in serious disrepair, 10% compared to 14%, the risk of disrepair increases for very elderly households. Some 15% of households with anyone aged 85 or more lived in homes in serious disrepair (see Annex Table 7.10).

7.14 The impact of poverty on the living conditions of older households appeared to be most marked in respect of disrepair: some 13% of poor older households were living in homes in serious disrepair compared to 9% of other older households, Figure 7.5. While the chances of living in homes with other problems also increased for those in poverty, the disparity was less marked.

7.15 Serious disrepair was also more prevalent among single compared to other older households (12% and 8% respectively), although there was little or no such disparity for single older households in respect of other poor living conditions.

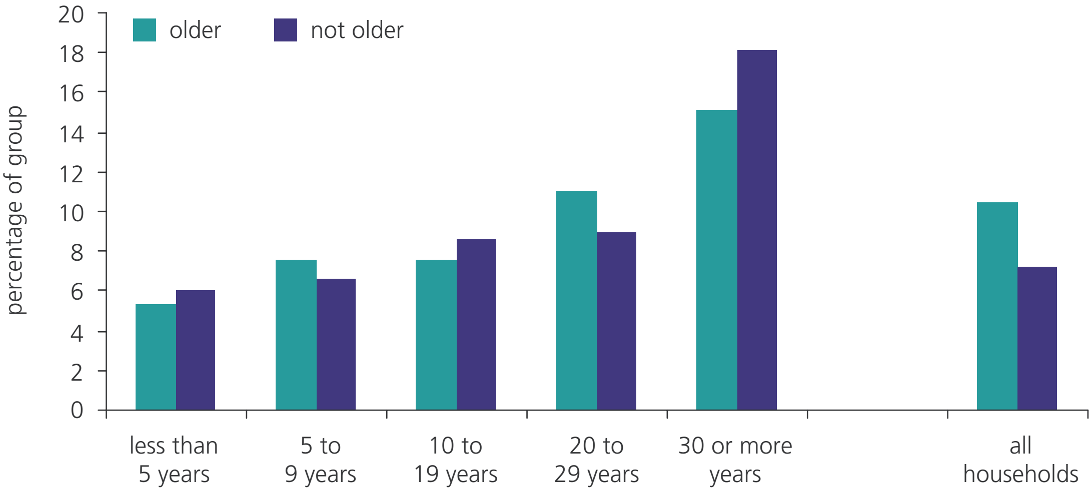
Figure 7.5: Households with older people (60+) by poor living conditions and poverty status, 2008



Base: all households
Note: underpinning data are presented in Annex Table 7.2
Source: English Housing Survey 2008, household sub-sample

7.16 The chance of the home comprising a HHSRS excess cold hazard for older people increased progressively with length of residence, Figure 7.6. Households who had lived in their current homes for thirty years or more were nearly three times more likely to live in a 'cold home' than those who had been resident less than five years. This was the case for both older and other households and the chances of living in such homes was similar for long term resident households whether in poverty or otherwise (see Annex Table 7.4).

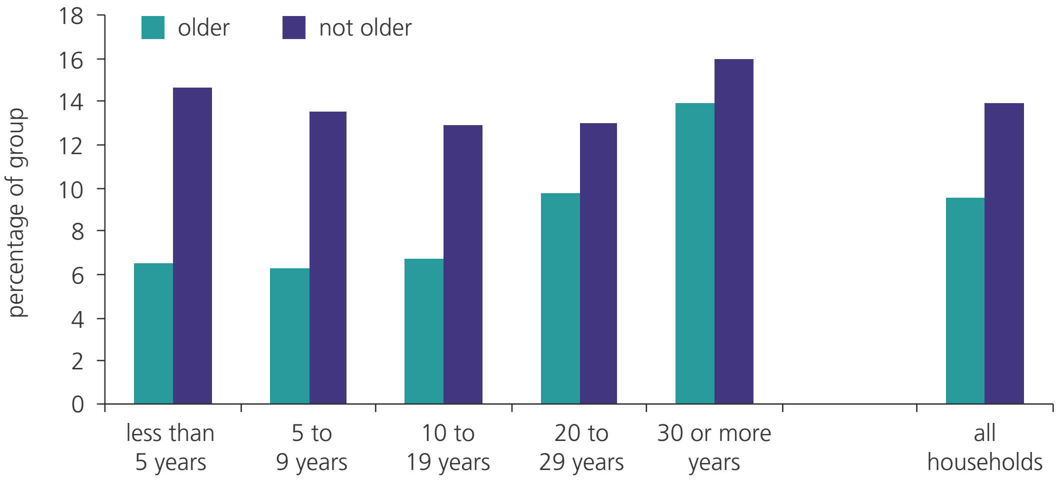
Figure 7.6: Percentage of homes with HHSRS Category 1 risk of excess cold by length of residence by older and other households, 2008



Base: all households
Note: underpinning data are presented in Annex Table 7.5
Source: English Housing Survey 2008, household sub-sample

7.17 The relationship between length of residence and poor living conditions for older households also holds for disrepair, Figure 7.7. While overall older households were less likely to live in homes with serious disrepair than others, older people who had been in their current home for more than 30 years were more than twice as likely to experience serious disrepair as older people who were resident for less than twenty years. This stands in contrast to other, 'younger' households where disparities in relation to length of residence were not so marked and where short and long term residence were both associated with a greater than average chance of living in a home in serious disrepair.

Figure 7.7: Percentage of homes in serious disrepair by length of residence by older and other households, 2008



Base: all households
Note: underpinning data are presented in Annex Table 7.6
Source: English Housing Survey 2008, household sub-sample

7.18 Another key factor affecting the likelihood of older people experiencing poor living conditions was tenure. Older households privately renting were almost six times more likely to live in a home comprising a HHSRS excess cold hazard than their counterparts in social housing irrespective of any poverty status (see Annex Table 7.7). Older households in owner occupation (11%) were also nearly three times more likely to experience such conditions as those in social housing.

7.19 Older households privately renting were also more than three times more likely to live in homes in serious disrepair than their counterparts in other tenures (27% compared to 8% for those renting social housing or in owner occupation). The chances of doing so appear to be independent of poverty status for the rented sectors, but not for owner occupying older households where around 13% of those in poverty experienced serious disrepair (see Annex Table 7.8).

Long term sick or disabled households

7.20 Overall disparities in living conditions between households where one or more people were long term sick or disabled were not pronounced in comparison with other households, Table 7.3, Figure 7.8.

Table 7.3: Long term sick or disabled households by poor living conditions, 2008

all households

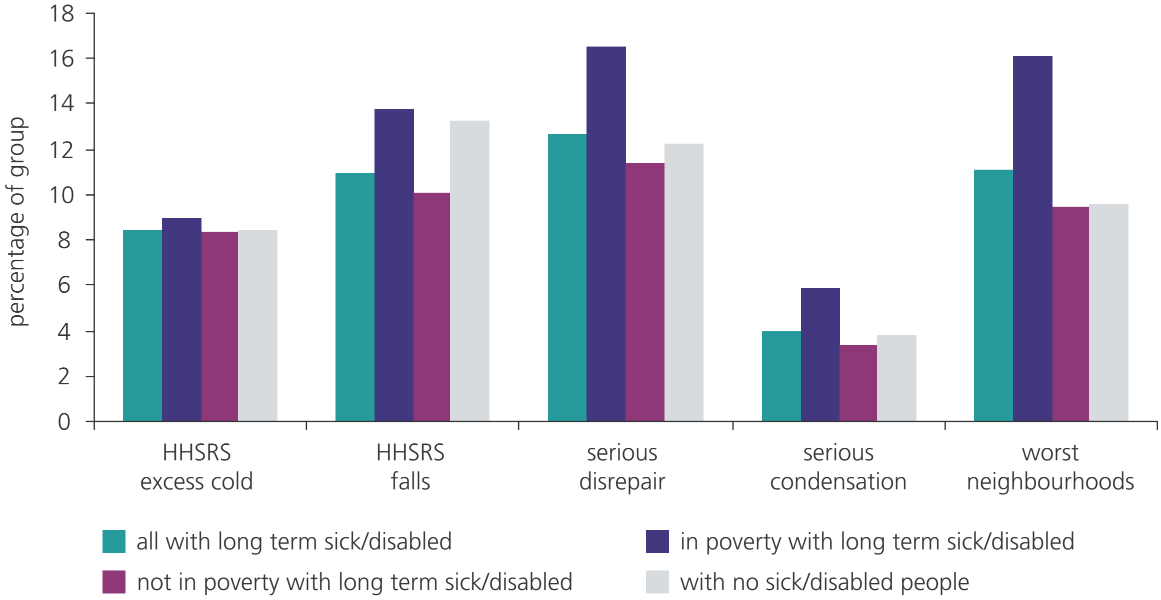
	percentage of group living in homes with:					number of households (000s)
	HHSRS excess cold	HHSRS falls	serious disrepair	serious condens-ation	worst neighbour-hoods	
all households						
households with long term sick/disabled						
single householder	7.6	10.1	14.4	4.1	12.0	2,379
couple or multi person household	9.0	11.5	11.6	3.9	10.6	3,970
all households with long term sick/disabled	8.5	11.0	12.6	4.0	11.1	6,350
other households	8.4	13.3	12.2	3.8	9.5	14,956
all households	**8.4**	**12.6**	**12.3**	**3.9**	**10.0**	**21,305**
households in poverty						
households with long term sick/disabled						
single householder	8.0	13.3	17.6	7.6	15.9	703
couple or multi person household	9.7	14.3	15.7	4.4	16.2	836
all households with long term sick/disabled	8.9	13.8	16.6	5.9	16.1	1,539
other households	8.9	12.6	18.5	6.4	16.5	2,228
all households in poverty	**8.9**	**13.0**	**17.7**	**6.2**	**16.4**	**3,767**
households not in poverty						
households with long term sick/disabled						
single householder	7.5	8.8	13.0	2.6	10.3	1,676
couple or multi person household	8.8	10.7	10.5	3.7	9.1	3,134
all households with long term sick/disabled	8.3	10.0	11.4	3.3	9.5	4,810
other households	8.3	13.4	11.1	3.4	8.3	12,728
all households not in poverty	**8.3**	**12.5**	**11.2**	**3.4**	**8.6**	**17,538**

Source: English Housing Survey 2008, household sub-sample

7.21 However *poor* long term sick or disabled households were more likely to be living in homes with HHSRS falls hazards, problems of disrepair, serious condensation or in neighbourhoods with worst upkeep problems. Some 17% of poor sick or disabled households lived in homes in serious disrepair compared to only 11% of other such households. Similarly, poor sick or disabled households were twice as likely to live in homes with serious condensation, 6% compared to 3% of those not in poverty. Around 16% of poor sick or disabled households were living in neighbourhoods with worst upkeep problems compared to 10% of other sick or disabled households.

7.22 Sick or disabled people living alone were no more likely to live in poor conditions compared to those living in couple or multi-person households.

Figure 7.8: Long-term sick or disabled people by poor living conditions and by poverty status, 2008



Base: all households
Note: underpinning data are presented in Table 7.3
Source: English Housing Survey 2008, household sub-sample

Ethnicity

7.23 Compared to white households, ethnic minority households were much more likely to be living in poor conditions outside of the HHSRS hazards related to excess cold and to falls, Table 7.4, Figure 7.9. While 12% of white households were living in homes with serious disrepair, 18% of ethnic minority households did so and this rose to 20% of black households. Ethnic minority households were almost four times more likely to be living in homes with serious condensation than white households (11% compared to 3% respectively). Furthermore, ethnic minority households were twice as likely to live in homes in the worst neighbourhoods (19% compared to 9% of white households).

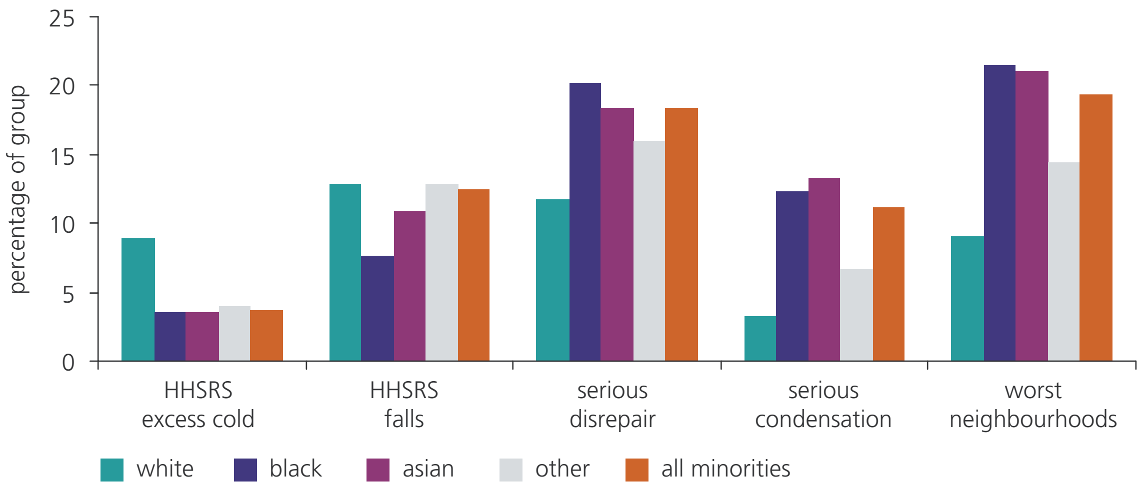
Table 7.4: Ethnicity by poor living conditions, 2008

all households

	percentage of group living in homes with:					number of households (000s)
	HHSRS excess cold	HHSRS falls	serious disrepair	serious condens-ation	worst neighbour-hoods	
all households:						
white	8.9	12.8	11.7	3.2	9.1	19,453
black	3.6	7.6	20.2	12.3	21.5	612
asian	3.5	10.9	18.3	13.3	21.1	808
other	3.9	12.9	16.0	6.7	14.4	534
all minorities	3.7	10.4	18.3	11.2	19.4	1,954
all households	**8.4**	**12.6**	**12.3**	**3.9**	**10.0**	**21,407**
in poverty:						
white	9.8	13.1	16.9	4.8	14.6	3,248
all minorities	3.1	12.3	21.6	14.8	26.5	554
all households in poverty	**8.8**	**13.0**	**17.6**	**6.2**	**16.3**	**3,801**
not in poverty:						
white	8.7	12.7	10.7	2.9	7.9	16,206
all minorities	3.9	9.7	17.0	9.8	16.6	1,400
all households not in poverty	**8.3**	**12.5**	**11.2**	**3.4**	**8.6**	**17,606**

Source: English Housing Survey 2008, household sub-sample

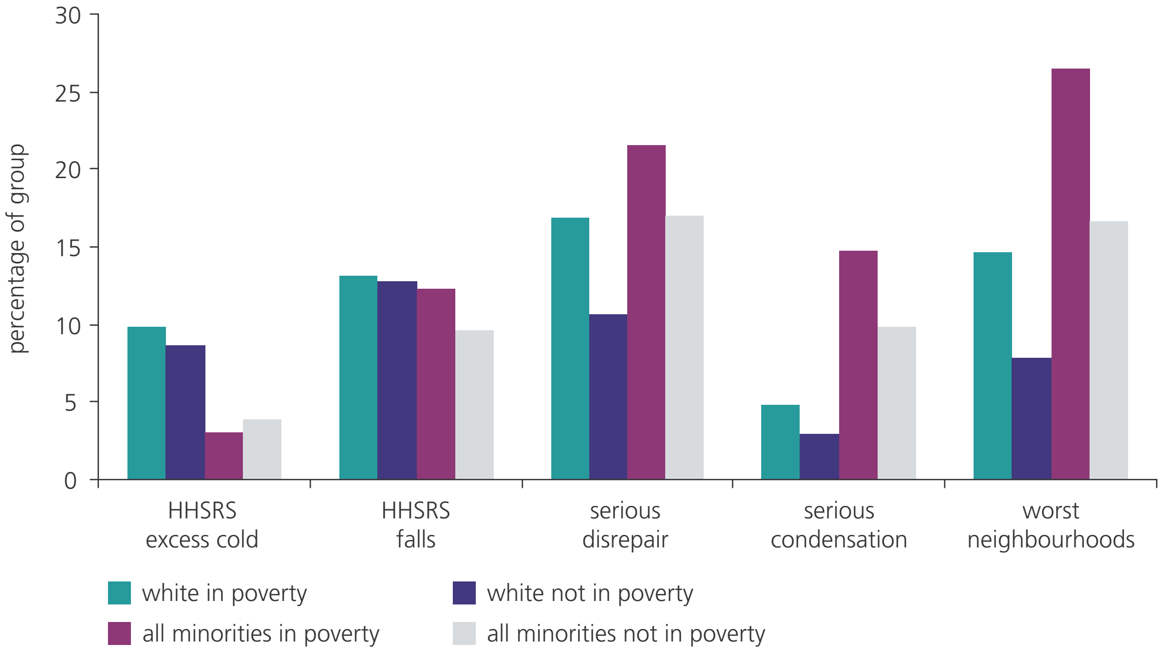
Figure 7.9: Ethnicity by poor living conditions, 2008



Base: all households
Note: underpinning data are presented in Table 7.4
Source: English Housing Survey 2008, household sub-sample

7.24 For both white and ethnic minority households poverty increased the likelihood of households living in homes in serious disrepair, with serious condensation problems or in neighbourhoods with worst upkeep problems, Figure 7.10. Some 22% of poor ethnic minorities were living in homes in disrepair, 15% in homes with serious condensation and more than one in four (26%) in neighbourhoods with worst upkeep problems.

Figure 7.10: Ethnicity by poor living conditions by poverty status, 2008



Base: all households
Note: underpinning data are presented in Table 7.4
Source: English Housing Survey 2008, household sub-sample

Trends

7.25 Between 1996 and 2008 there was steady improvement in the energy efficiency of occupied homes; the average SAP rating increased by nine points from 42 to 51, Table 7.5. All income groups benefited from these improvements, the poorest gaining at least as much as the richest fifth of households and maintaining their relative advantage in average SAP ratings (52 against 50 in 2008).

Table 7.5: Average SAP by income quintiles, 1996 to 2008

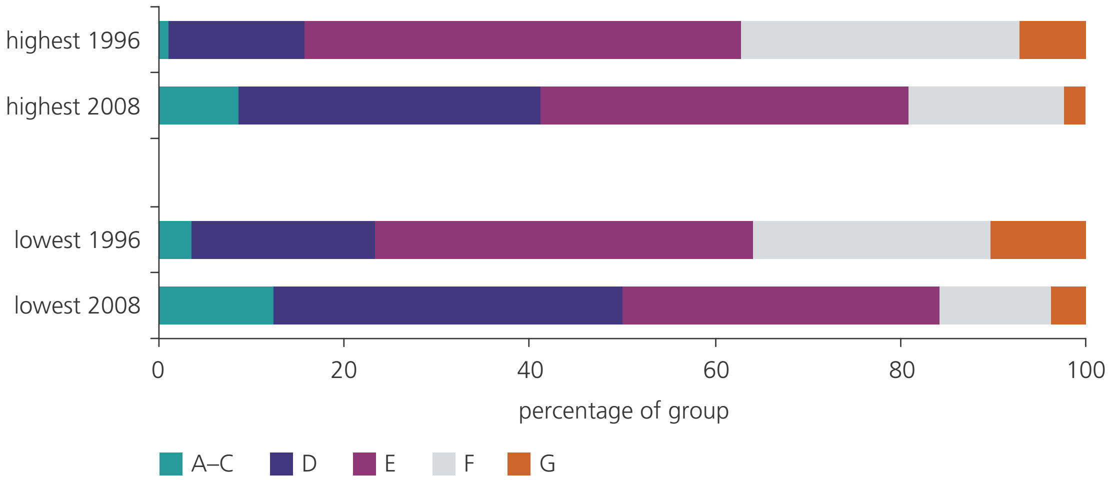
all households

	1996	2001	2003	2004	2005	2006	2007	2008
1st quintile (lowest)	42.5	45.7	47.2	48.1	48.9	49.6	51.0	52.4
2nd	42.3	46.0	48.0	48.9	49.6	50.2	51.0	52.2
3rd	42.4	45.7	47.0	47.4	48.2	49.0	50.2	51.6
4th	42.0	45.8	46.1	46.8	47.2	47.9	49.1	51.1
5th quintile (highest)	41.6	45.4	45.4	46.1	46.6	47.3	48.3	50.1
all households	**42.2**	**45.7**	**46.7**	**47.5**	**48.1**	**48.8**	**49.9**	**51.5**

Source: English House Condition Survey 1996 to 2007, English Housing Survey 2008, household sub-sample

7.26 These improvements can be seen in the distribution of energy efficiency rating bands for the homes of the poorest and richest fifth of households, Figure 7.11. The percentage of the poorest households living in more efficient Band A to D homes more than doubled between 1996 and 2008 (from 23% to 50% of all poorest households), while the percentage living in the more inefficient Band F and G homes more than halved (from 36% to 16%). In comparison some 41% of the richest households lived in efficient Band A to D homes, with another 19% living in inefficient Band F and G homes. The distribution of the housing stock in terms of energy efficiency rating bands is detailed in Chapter 5.

Figure 7.11: Distribution of EPC Energy Efficiency Rating Bands by household income (highest and lowest fifths of households only), 1996 and 2008



Base: all households in the highest and lowest income quintiles
Note:
1) underpinning data are presented in Annex Table 7.9
2) the quintile groups are based on equivalised income before housing costs are taken into account (BHC). Energy efficiency bands are based on Energy Performance Certificate (EPC) grouping of SAP ratings. See the Glossary for details of these.
Source: English House Condition Survey 1996, English Housing Survey 2008, household sub-sample

7.27 Overall, all income groups saw an overall reduction in the amount of disrepair in their homes between 2001 and 2008, Table 7.6. Nevertheless disparities remained in 2008, with the poorest fifth of households tending to live in homes with the greatest amount of repair work required: on average their homes required £14/m^2 (at 2001 prices) of work to deal with disrepair compared to £8/m^2 for the homes of the most affluent fifth of households. There was no clear picture regarding any change in disparities between the poorest and richest households, Figure 7.12.

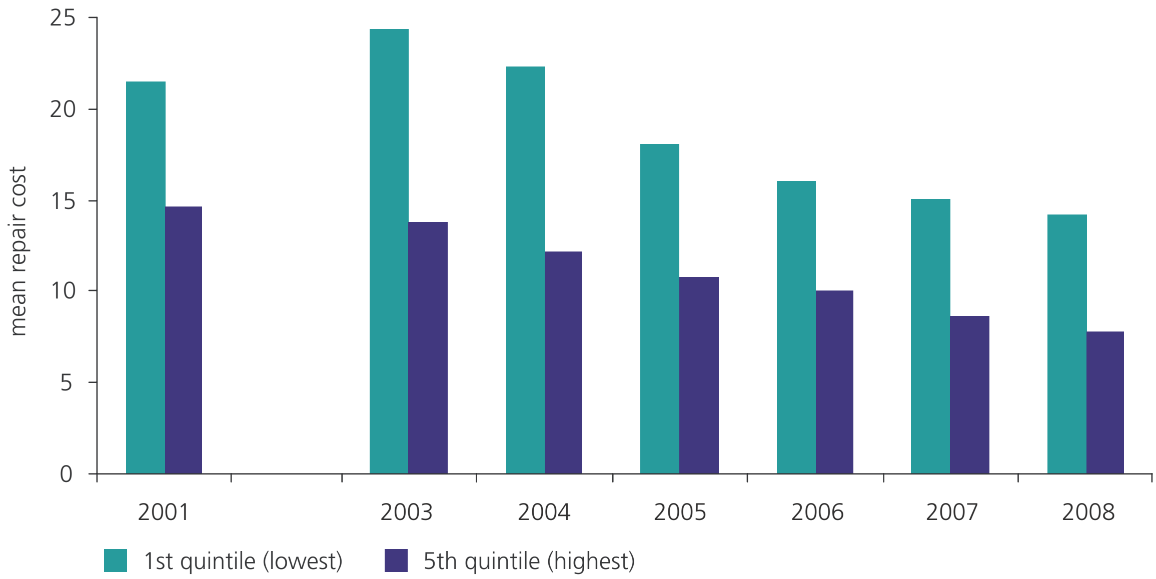
Table 7.6: Average repair costs (£/m^2 at 2001 prices) by income quintiles (BHC), 2001 to 2008

all households

	2001	2003	2004	2005	2006	2007	2008
1st quintile (lowest)	21.5	24.4	22.3	18.1	16.0	15.1	14.2
2nd quintile	19.6	17.9	16.9	15.7	13.6	12.7	11.8
3rd quintile	17.3	16.2	15.9	14.4	12.6	11.0	10.4
4th quintile	16.5	15.6	13.8	12.6	11.9	9.9	8.6
5th quintile (highest)	14.6	13.8	12.2	10.7	10.0	8.7	7.8
all households	**18.0**	**17.6**	**16.2**	**14.3**	**12.8**	**11.5**	**10.6**

Source: English House Condition Survey 2001 to 2007, English Housing Survey 2008, household sub-sample

Figure 7.12: Average repair costs (£/m^2 at 2001 prices) by household income (highest and lowest fifths of households only), 2001 to 2008



Base: all households in the highest and lowest income quintiles
Note: underpinning data are presented in Table 7.6
Source: English House Condition Survey 2001 to 2007, English Housing Survey 2008, household sub-sample

Appendix A
Sampling and grossing

General Description

The survey consists of three main components: an initial interview survey of 17,700 households; a follow up physical inspection; and a desk based market valuation of a sub-sample of 8,000 of these dwellings, including vacant properties. The interview survey sample forms part of ONS's Integrated Household Survey (IHS), and the core questions from the IHS form part of the EHS questionnaire. More information about the IHS is available from its webpage: http://www.statistics.gov.uk/CCI/nugget.asp?ID=936&Pos=1&ColRank=1&Rank=224

The EHS interview content covers the key topics included under the former Survey of English Housing (SEH) and English House Condition Survey (EHCS). The content of the physical and market value components remains very largely unchanged from the former EHCS.

Sampling

2008–09 Sample

1. The initial sample for 2008–09 consisted of 32,100 addresses drawn as a systematic random sample from the Postcode Address File (small users). Interviews were attempted at all of these addresses over the course of the survey year from April 2008 to March 2009. A proportion of addresses were found not to be valid residential properties (eg demolished properties, 2nd/holiday dwellings, small businesses, properties not yet built). In all, interviews with a member of the household were achieved at 17,691 addresses.

2. This sample of 17,691 households is referred to as the '*full household sample*' and is the sample base for all findings in the companion EHS Household Report 2008–09.

3. Of the 17,691 addresses where interviews were achieved (the 'full household sample'), all social rented properties and a sub-sample of private properties were regarded as eligible for the physical survey and the respondent's consent to this was sought. A proportion of vacant properties were also sub-sampled. During 2008–09 physical surveys were completed in 7,972 cases, of which 7,640 were occupied. These are used in combination with the achieved sample from the 2007–08 English House Condition Survey (8,178 physical surveys achieved of which 7,833 were occupied) to form the 2008 '*dwelling sample*' (16,150 physical surveys) and '*household sub-sample*' (15,523

interviews). **All findings for the EHS Housing Stock Report 2008 are based on these two year combined samples**.

4. The principal difference in sampling methodology between the EHS and the EHCS is that the EHS uses an unclustered sample. In principle this improves the precision of estimates for a given sample size, although survey errors associated with measures from the EHS physical survey remain largely the same as for the EHCS.

Grossing methodology

5. The grossing methodology reverses the sampling and sub-sampling, and adjusts for any identifiable non-response bias at each stage of the survey. Household results are then weighted to population totals by region and age by sex, and to the tenure distribution of the Labour Force Survey (LFS).

6. For the dwelling sample, household weights are first derived as above for the household sub-sample, then dwelling weights are derived using CLG's dwelling estimates, and adjusted to be comparable with the household weights using the household-to-dwelling relationships found in the survey. Overall this approach is very similar to that of the EHCS, except that the final calibration is now firstly to household totals rather than solely to the CLG dwelling totals. To create weights for the combined two year dwelling sample, the 2007–08 EHCS sample was regressed using the EHS methodology before being combined with the 2008–09 sample.

7. As part of data validation prior to the grossing, tenure corrections are made where cases are reported as local authority tenancies but where the local authority is known to have transferred all its stock to one or more housing associations under a Large Scale Voluntary Transfer (LSVT). Similarly, where a local authority's stock is known to be managed by an Arm's Length Management Organisation (ALMO), cases where an ALMO is reported as the landlord are coded as local authority tenancies. This results in a more robust split between the local authority and housing association stock, and is consistent with EHCS past practice.

Impact of methodological changes

8. The EHS was designed to ensure maximum continuity with its predecessors in the SEH and EHCS, whilst introducing improvements where appropriate. Despite this, it is inevitable that there will be some minor discontinuities between the EHS and its predecessors. To help examine this, data for the 2-year EHS dwelling sample and household sub-sample were regrossed using the EHCS methodology to compare results with those from the EHS proper.

9. However the change to calibrating households to tenure proportions from the LFS, then deriving dwelling weights, has resulted in some increase in the estimated numbers of private rented dwellings and their households, and also a significant increase in the number of younger (aged less than 60) one person households. These estimates are shown in Tables A1 and A2 below.

10. Nevertheless, and as reported in the EHS Headline Report 2008–09, the EHCS and EHS grossing methodologies for 2008 produce similar estimates for indicators of housing energy performance and condition (see pages 52 and 53 of the Headline Report as well as Tables A1 and A2 below). Any differences in these indicators are small and well within margins of error entailed in the survey.

11. Full details of technical issues will be provided in the EHS Technical Advice Notes.

Table A1: Dwelling estimates by tenure and energy and condition indicators by tenure, 2008

all dwellings

	number (000s)	energy efficiency SAP rating	mean basic repair costs (£m^2)	energy efficiency rating bands F/G	
				number (000s)	%
EHCS grossing:					
owner occupied	15,581	49.6	12.8	2,918	18.7
private rented	2,906	50.1	29.1	602	20.7
local authority	1,866	57.9	19.9	147	7.9
housing association	2,046	60.4	12.6	131	6.4
all dwellings	**22,398**	**51.3**	**15.5**	**3,799**	**17.0**
EHS grossing:					
owner occupied	15,007	49.6	12.7	2,798	18.6
private rented	3,296	50.2	28.5	676	20.5
local authority	1,984	58.0	19.6	157	7.9
housing association	1,951	60.3	12.4	128	6.5
all dwellings	**22,239**	**51.4**	**15.6**	**3,758**	**16.9**

Source: 2008 EHS dwelling sample

Table A2: Household estimates by composition and energy and condition indicators by household composition, 2008

all households

	number (000s)	energy efficiency SAP rating	mean basic repair costs (£m²)	energy efficiency rating bands F/G	
				number (000s)	%
EHCS grossing:					
couple under 60	3,924	51.3	12.4	629	16.0
couple aged 60+	3,843	49.1	9.4	791	20.6
couple with children	4,902	51.6	13.1	757	15.4
lone parent	1,482	55.3	17.2	140	9.5
other households	1,534	51.4	19.1	221	14.4
one person under 60	2,517	53.4	18.5	382	15.2
one person aged 60+	3,283	50.9	14.0	652	19.9
all households	**21,487**	**51.4**	**13.8**	**3,572**	**16.6**
EHS grossing:					
couple under 60	4,085	51.6	12.5	650	15.9
couple aged 60+	3,414	49.1	9.4	695	20.4
couple with children	4,641	51.7	13.0	710	15.3
lone parent	1,405	55.3	17.3	124	8.9
other households	1,640	51.6	20.1	240	14.7
one person under 60	2,846	53.5	18.5	422	14.8
one person aged 60+	3,376	50.8	13.9	671	19.9
all households	**21,407**	**51.6**	**14.0**	**3,513**	**16.4**

Source: 2008 EHS household sub-sample

Appendix B:
Sampling errors

Sources of error in surveys

Like all estimates based on samples, the results of the EHS are subject to various possible sources of error. The total error in a survey estimate is the difference between the estimate derived from the data collected and the (unknown) true value for the population. The total error can be divided into two main types: systematic error and random error.

Systematic error, or bias, covers those sources of error which will not average to zero over repeats of the survey. Bias may occur, for example, if certain sections of the population are omitted from the sampling frame, if non-respondents to the survey have different characteristics to respondents, or if interviewers systematically influence responses in one way or another. When carrying out a survey, substantial efforts are put into the avoidance of systematic errors but it is possible that some may still occur.

The most important component of random error is sampling error, which is the error that arises because the estimate is based on a sample survey rather than a full census of the population. The results obtained for any single sample may, by chance, differ from the true values for the population but the difference would be expected to average to zero over a number of repeats of the survey. The amount of variation depends on the size of the sample and the sample design and weighting method.

A measure of the impact of the variation introduced by the sample design and the weighting is the design factor (deft). This is evaluated relative to the error that would have been produced had the survey been carried out using a simple random sample[29]. A deft greater than one shows that the design and weighting have increased the variability of the estimate and increased the measure of the standard error relative to the reference. Since the 2008–09 EHS effectively is a simple random sample the deft arises solely from the weighting adjustments. However, as the housing stock data are based on combined samples from two surveys, one of which is clustered, the defts represent both the effects of the survey design and the variability of the weights.

Random error may also arise from other sources, such as variation in the informant's interpretation of the questions, or interviewer variation. Efforts are made to minimise these effects through interviewer training and through pilot work.

29 Technically, the deft is the estimate of the standard error produced under the complex design divided by the standard error under an equally weighted simple random sample.

Confidence intervals

Although the estimate produced from a sample survey will rarely be identical to the population value, statistical theory allows us to measure the accuracy of any survey result. The standard error can be estimated from the values obtained for the sample and this allows calculation of confidence intervals which give an indication of the range in which the true population value is likely to fall.

Tables B1 and B2 provide standard errors and 95% confidence intervals around selected key survey estimates.

Table B1: Sampling errors using weighted data: percentages, 2008

characteristic	unweighted base	percentage	standard error (percentage)	design factor (deft)	95% confidence interval (including the impact of the deft)	
					lower	upper
tenure	**16,150**					
owner occupied		67.5	0.4	1.0	66.7	68.2
private rented		14.8	0.3	1.3	14.2	15.4
local authority		8.9	0.2	0.8	8.5	9.4
housing association		8.8	0.2	0.7	8.3	9.2
dwelling type	**16,150**					
end terrace		9.9	0.3	1.3	9.4	10.4
mid terrace		18.7	0.4	1.6	17.9	19.4
semi detached		26.0	0.4	1.4	25.2	26.8
detached		17.4	0.4	1.6	16.7	18.1
bungalow		9.4	0.3	1.4	8.9	9.9
converted flat		3.7	0.2	1.8	3.3	4.1
purpose built flat, low rise		13.4	0.3	1.2	12.8	14.0
purpose built flat, high rise		1.5	0.1	1.2	1.3	1.7
dwelling age	**16,150**					
pre 1919		21.4	0.4	1.8	20.6	22.2
1919–44		16.4	0.4	1.6	15.7	17.1
1945–64		19.6	0.4	1.3	18.9	20.3
1965–80		21.6	0.4	1.4	20.9	22.4
1981–90		8.8	0.3	1.5	8.2	9.3
post 1990		12.2	0.3	2.0	11.5	12.8
decent homes						
owner occupied	7,983					
decent		67.7	0.6	1.1	66.6	68.8
non-decent		32.3	0.6	1.1	31.2	33.4
private rented	2,566					
decent		56.0	1.1	1.3	53.8	58.2
non-decent		44.0	1.1	1.3	41.8	46.2
local authority	2,899					
decent		68.5	1.0	1.4	66.5	70.5
non-decent		31.5	1.0	1.4	29.5	33.5
housing association	2,702					
decent		77.2	0.9	1.3	75.4	79.0
non-decent		22.8	0.9	1.3	21.0	24.6

continued

characteristic	unweighted base	percentage	standard error (percentage)	design factor (deft)	95% confidence interval (including the impact of the deft)	
					lower	upper
all	16,150					
decent		66.9	0.4	1.5	66.0	67.8
non-decent		33.1	0.4	1.5	32.2	34.0
energy efficiency rating band						
owner occupied	7,983					
A to C		6.2	0.3	1.7	5.6	6.8
D and E		75.2	0.5	1.2	74.2	76.2
F and G		18.6	0.5	1.1	17.7	19.6
private rented	2,566					
A to C		11.6	0.8	1.9	10.1	13.2
D and E		67.9	1.1	1.4	65.7	70.0
F and G		20.5	0.9	1.2	18.8	22.2
local authority	2,899					
A to C		20.8	0.8	1.3	19.2	22.5
D and E		71.3	1.0	1.4	69.4	73.1
F and G		7.9	0.6	1.4	6.7	9.1
housing association	2,702					
A to C		29.9	1.0	1.4	27.9	31.9
D and E		63.6	1.0	1.3	61.5	65.6
F and G		6.5	0.6	1.3	5.5	7.6
all	16,150					
A to C		10.4	0.3	1.3	9.8	10.9
D and E		72.7	0.4	1.4	71.9	73.5
F and G		16.9	0.4	1.5	16.2	17.6

Table B2: Sampling errors using weighted data: average SAP, 2008

characteristic	unweighted base	percentage	standard error (percentage)	design factor (deft)	95% confidence interval (including the impact of the deft)	
					lower	upper
Energy efficiency (SAP) rating						
owner occupied	7,983	49.62	0.17	1.26	49.28	49.95
private rented	2,566	50.16	0.37	1.34	49.44	50.89
local authority	2,899	58.00	0.29	1.38	57.44	58.56
housing association	2,702	60.34	0.31	1.38	59.74	60.95
all tenures	**16,150**	**51.39**	**0.14**	**1.47**	**51.11**	**51.66**

Glossary of key definitions and terms 2008

Age

This is the date of construction of the oldest part of the building.

Area Type

city or other urban centre: includes:

city centre: the area around the core of a large city.

other urban centre: the area around towns and small cities, and also older urban areas which have been swallowed up by a metropolis.

suburban residential: the outer area of a town or city; characterised by large planned housing estates.

rural: includes:

rural residential: a suburban area of a village, often meeting the housing needs of people who work in nearby towns and cities.

village centre: the traditional village or the old heart of a village which has been suburbanised.

rural: an area which is predominantly rural e.g. mainly agricultural land with isolated dwellings or small hamlets.

Carbon dioxide (CO_2) emissions

The total carbon dioxide emissions from space heating, water heating, ventilation and lighting, less the emissions saved by energy generation as derived from SAP calculations and assumptions. These are measured in tonnes/year. Unlike the EIR the CO_2 emissions presented in the 2006 report are not adjusted for floor area and represent emissions from the whole dwelling. The highest and lowest emitting performers have also been grouped with cut-off points set at 3 tonnes per year for the low emitters and 10 tonnes per year for the highest. CO_2 emissions for each dwelling are based on a standard occupancy and a standard heating regime.

Damp and mould growth

Damp and mould in dwellings fall into three main categories:

rising damp: where the surveyor has noted the presence of rising damp in at least one of the rooms surveyed during the physical survey. Rising damp occurs when water from the ground rises up into the walls or floors because damp proof courses in walls or damp proof membranes in floors are either not present or faulty.

penetrating damp: where the surveyor has noted the presence of penetrating damp in at least one of the rooms surveyed during the physical survey. Penetrating damp is caused by leaks from faulty components of the external fabric e.g. roof covering, gutters etc. or leaks from internal plumbing e.g. water pipes, radiators etc.

condensation or mould: caused by water vapour generated by activities like cooking and bathing condensing on cold surfaces like windows and walls. Virtually all dwellings have some level of condensation occurring. Only *serious* levels of condensation or mould are considered as a problem in this report.

Decent homes

A decent home is one that meets **all** of the following four criteria:

a) meets the **statutory minimum** standard for housing. From April 2006 the Fitness Standard was replaced by the Housing Health and Safety Rating System (HHSRS).

b) it is in a reasonable state of **repair** (assessed from the age and condition of a range of building components including walls, roofs, windows, doors, chimneys, electrics and heating systems).

c) it has reasonably **modern facilities and services** (assessed according to the age, size and layout/location of the kitchen, bathroom and WC and any common areas for blocks of flats, and to noise insulation).

d) it provides a reasonable degree of **thermal comfort** (adequate heating and effective thermal insulation).

The detailed definition for each of these criteria is included in A Decent Home: Definition and guidance for implementation, Communities and Local Government, June 2006:

http://www.communities.gov.uk/publications/housing/decenthome

Deprived districts

These are based on districts, which were supported through the Neighbourhood Renewal Fund (NRF) between 2001 and 2008.

The NRF aimed to enable England's most deprived local authorities to improve services, narrowing the gap between deprived areas and the rest of the country.

The districts were receiving an NRF allocation 2006 to 2008 or had received an allocation in earlier years (91 districts in total). From 2008, Working Neighbourhoods Fund replaced NRF.

Deprived local areas

These are Lower Layer Super Output Areas (LSOAs) scored and ranked by the 2007 Index of Multiple Deprivation (IMD).

LSOAs are a statistical geography providing uniformity of size. There are 32,482 in England and on average each contains around 625 dwellings.

These ranked areas have been placed into ten groups of equal numbers of areas, from the 10% most deprived areas on the Index, to the 10% least deprived.

Double glazing

This covers factory made sealed window units only. It does not include windows with secondary glazing or external doors with double or secondary glazing (other than double glazed patio doors which are surveyed as representing two windows).

Dwelling

A dwelling is a self-contained unit of accommodation (normally a house or flat) where all the rooms and amenities (i.e. kitchen, bath/shower room and WC) are for the exclusive use of the household(s) occupying them. In rare cases, amenities may be located outside the front door but provided they are for the exclusive use of the occupants, the accommodation is still classed as a dwelling.

For the most part a dwelling will be occupied by one household. However, it may contain none (vacant dwelling) or may contain more than one (House in Multiple occupation or HMO).

Dwelling type

Dwellings are classified, on the basis of the surveyors' inspection, into the following categories:

terraced house

a) size

small terraced house: a house with a total floor area of less than $70m^2$ forming part of a block where at least one house is attached to two or more other houses.

medium/large terraced house: a house with a total floor area of $70m^2$ or more forming part of a block where at least one house is attached to two or more other houses.

b) attachment

end terraced house: a house attached to one other house only in a block where at least one house is attached to two or more other houses.

mid-terraced house: a house attached to two other houses in a block.

semi-detached house: a house that is attached to just one other in a block of two.

detached house: a house where none of the habitable structure is joined to another building (other than garages, outhouses etc.).

bungalow: a house with all of the habitable accommodation on one floor. This excludes chalet bungalows and bungalows with habitable loft conversions, which are treated as houses.

converted flat: a flat resulting from the conversion of a house or former non-residential building. Includes buildings converted into a flat plus commercial premises (typically corner shops).

purpose built flat, low rise: a flat in a purpose built block less than six storeys high. Includes cases where there is only one flat with independent access in a building which is also used for non-domestic purposes.

purpose built flat, high rise: a flat in a purpose built block of at least six storeys high.

Energy cost

This represents the total energy cost from space heating, water heating, ventilation and lighting, less the costs saved by energy generation as derived from SAP calculations and assumptions. This is measured in £ per year using constant prices based on average fuel prices for 2005 (which input into the 2005 Standard Assessment Procedure) and do *not* reflect subsequent changes in fuel prices. Energy costs for each dwelling are based on a standard occupancy and a standard heating regime.

Energy Performance Certificate

The Energy Performance Certificate (EPC) provides a range of indicators based on current performance, whether the property would benefit in terms of improved performance from a range of low cost and higher cost measures, and the likely performance arising from the application of those measures. The EPC assessment is based on a simplified form of the energy efficiency Standard Assessment Procedure (SAP) known as Reduced Data SAP (RDSAP).

The EHCS currently provides the following EPC based indicators but using the survey's own approach to SAP:

current performance:

- *energy efficiency rating* (EER) and bands
- *environmental impact rating* (EIR) and bands
- *primary energy use* (kWh/m^2 per year)
- *energy cost* (£ per year), but unlike the EPC these are based on 2005 constant prices
- *CO_2* (carbon dioxide) emissions (tonnes per year).

improvement measures: as part of the EPC, certain improvement measures are suggested, which would improve the energy efficiency of the dwelling. These include improvements to both heating and insulation measures.

a) *higher cost measures* (more than £500):

- upgrade to **central heating controls**, for boiler driven systems, typically to a stage where a room thermostat, a central programmer and thermostatic radiator valves (TRV's) have been installed (although the range of upgraded controls can vary depending on the heating system);
- upgrading to a **class A condensing boiler** using the same fuel (mains gas, LPG or fuel oil), where a non-communal boiler is in place (this improvement measure is most appropriate when the existing central heating boiler needs repair or replacement);
- upgrading existing storage radiators (or other electric heating) to more **modern, fan-assisted storage heaters**;
- installation of a **hot water cylinder thermostat** where a storage cylinder is in use but no thermostat exists;
- replacement **warm-air unit** with a fan-assisted flue, where the original warm-air heating unit is pre-1998;
- installation of a manual feed **biomass boiler** or **wood pellet stove** where an independent, non-biomass solid fuel system exists. This measure was assessed to identify the number of dwellings that would benefit from this measure but was not included in the post improvement energy efficiency rating or carbon dioxide emissions (reported in section 4) due a combination of the small amount of dwellings that would benefit and modelling complexity.

b) *lower cost measures* (less than £500):

- installation or upgrade of **loft insulation** which is less than 250mm, where the dwelling is not a mid- or ground-floor flat and where the loft does not constitute a full conversion to a habitable room;
- installation of **cavity wall insulation**, where the wall is of cavity construction;
- installation or upgrade of **hot water cylinder insulation** to a level matching a 160mm jacket. Recommended where the current level is less than 25mm of spray foam or less than a 100mm jacket.

The survey is not able to include the following improvements: draft proofing and low energy lighting.

Other more expensive measures that are not included are: solar water heating; double or secondary glazing; solid wall insulation; complete change of heating system to class A condensing boiler (including fuel switching); solar photovoltaics (PV) panels.

Energy efficiency rating

The measure of energy efficiency used is the energy cost rating as determined by the Government's Standard Assessment Procedure (SAP), used to monitor the energy efficiency of dwellings. This is based on a home's energy costs per m^2 of floor area for standard occupancy of a dwelling and a standard heating regime and is calculated from the survey using a simplified form of the SAP. The energy costs take into account the costs of space and water heating, ventilation and lighting, less cost savings from energy generation technologies. They do not take into account variation in geographical location. The rating is expressed on a scale of 1–100 where a dwelling with a rating of 1 has poor energy efficiency (high costs) and a dwelling with a rating of 100 represents zero net energy cost per year.

The detailed methodology for calculating the Government's SAP to monitor the energy efficiency of dwellings was comprehensively updated in 2005 to reflect developments in the energy efficiency technologies and knowledge of dwelling energy performance. The rating scale was also revised to run between 1 and 100 under the 2005 methodology (under the previous 2001 methodology the scale ran between 1 and 120). Therefore, a SAP rating using the 2001 method is not directly comparable to one calculated under the 2005 methodology, and it would be incorrect to do so. All SAP statistics used in reporting from 2005 are based on the SAP 2005 methodology and this includes time series data from 1996 to the current reporting period (i.e. the SAP 2005 methodology has been retrospectively applied to 1996 and subsequent survey data to provide consistent results in the 2005 and following reports).

Energy Efficiency Rating (EER) Bands

The energy efficiency rating is also presented in an A-G banding system for an Energy Performance Certificate, where Band A rating represents low energy costs (i.e. the most efficient band) and Band G rating represents high energy costs (the least efficient band). The break points in SAP used for the EER bands are:

- Band A (92–100)
- Band B (81–91)
- Band C (69–80)
- Band D (55–68)
- Band E (39–54)
- Band F (21–38)
- Band G (1–20).

Environmental Impact Rating (EIR)

Based on the Energy Performance Certificate the EIR is a measure of a home's impact on the environment in terms of CO_2 emissions/m^2 of floor area. The emissions take into account space heating, water heating, ventilation and lighting, less the emissions saved by energy generation technologies. The rating is expressed on a scale of 1–100 where a dwelling with a rating of 1 has high CO_2 emissions and a dwelling with a rating of 100 represents zero net emissions per year.

The EIR rating is also expressed in an A-G banding system for Energy Performance Certificates where an A rating represents low carbon emissions and a G rating represents high carbon emissions. The EER and the EIR use common break points for their Bands (see above).

Energy Use (primary)

The energy use relates to the primary energy used. This takes into account distribution losses and energy used to produce fuels along with the energy actually used in the dwelling (as derived from SAP calculations and assumptions). This is measured in kWh/m^2 per year. Energy use for each dwelling is based on a standard occupancy and a standard heating regime.

Excess cold (HHSRS Category 1 hazard)

Households living in homes with a threat to health arising from sub-optimal indoor temperatures. The assessment is based on the most vulnerable group who, for this hazard, are those aged 65 years or more (the assessment does not require a person of this age to be an occupant). The EHS does not measure achieved temperatures in the home and therefore this hazard is based on dwellings with an energy efficiency rating of less than 35 based on the SAP 2001 methodology. Under the SAP 2005 methodology the comparable threshold was recalculated to be 31.49 and the latter is used in providing statistics for the HHSRS Category 1 hazard.

Heating system

a) main space heating type:

central heating system: most commonly a system with a gas fired boiler and radiators which distribute heat throughout the dwelling (but also included in this definition are warm air systems, electric ceiling/underfloor and communal heating). It is generally considered to be a cost effective and relatively efficient method of heating a dwelling.

storage heaters: predominately used in dwellings that have an off-peak electricity tariff. Storage heaters use off-peak electricity to store heat in clay bricks or a ceramic material, this heat is then released throughout the day. However, storage heating can prove expensive if too much on peak electricity is used during the day.

room heaters: this category includes all other types of heater such as fixed gas, fixed electric or portable electric heaters, this type of heating is generally considered to be the least cost effective of the main systems and produces more carbon dioxide emissions per kWh.

b) heating fuel:

gas: mains gas is relatively inexpensive and produces lower emissions per unit of energy than most other commonly used fuels. Liquefied Petroleum Gas and bottled gas are still associated with slightly higher costs and emissions.

electricity: standard rate electricity has the highest costs and CO_2 emissions associated with main fuels, but is used in dwellings without a viable alternative or a back-up to mains gas. An off-peak tariff such as Economy 7, is cheaper than bottled gas but with the same emissions as standard electricity.

oil: in terms of both costs and emissions, oil lies between main gas and electricity.

solid fuel: these are similar costs to oil with the exception of processed wood which can be more expensive than off-peak electricity. Fuels included are coal and anthracite, with CO_2 emissions above those of gas and oil; wood, which has the lowest emissions of the main fuels; and smokeless fuel, whose emissions are close to those of electricity. By law, areas (usually towns or cities) are designated as smoke control areas where solid fuels emitting smoke are illegal.

c) water heating system:

combined: provides heat to supply hot water for the dwelling.

separate: dwellings which have electrical space heating systems often use electric immersion heaters to heat water. Other dwellings may be fitted within instantaneous water heaters, such as electric showers.

d) boiler type:

standard: provides hot water or warm air for space heating with the former also providing hot water via a separate storage cylinder.

back: located behind a room heater and feeds hot water to a separate storage cylinder. They are generally less efficient than other boiler types.

combination: provides hot water or warm air for space heating and can provide hot water on demand negating the need for a storage cylinder, therefore requiring less room.

condensing: standard and combination boilers can also be condensing. A condensing boiler uses a larger, or dual, heat exchanger to obtain more heat from burning fuel than an ordinary boiler, and is generally the most efficient boiler type.

Household

A household is defined as one person living alone or a group of people, who may or may not be related, living in the same dwelling who share at least one living or sitting room and/or have a regular arrangement to share at least one meal a day. Shared houses where the occupants have a joint tenancy or where they came together as a group to rent the house and would themselves fill any vacancies rather than expecting the landlord to do this are also classed as a single household; even though they may not share a sitting room or a meal per day.

Household reference person (HRP)

This is the person in whose name the dwelling is owned or rented or who is otherwise responsible for the accommodation. In the case of joint owners and tenants, the person with the highest income is taken as the HRP. Where incomes are equal, the older is taken as the HRP. This procedure increases the likelihood that the HRP better characterises the household's social and economic position.

Household groups

children (0–15): a household that includes at least one person under 16 years of age.

ethnic minorities: where the respondent defines their ethnicity as something other than white.

illness or disability: a household where at least one person in the household has a long-term illness or disability. The respondent assesses this and long-term is defined as anything that has troubled the person, or is likely to affect them, over a period of time.

in poverty: a household with income below 60% of the equivalised median household income (calculated before any housing costs are deducted).

lone parents: a household comprising a lone parent with at least one dependent child (i.e. a person under 16 years of age, or aged 16 to 18, single and in full-time education).

poorest households: households with equivalised income (calculated before any housing costs are deducted) in the lowest 20% of all households income;

older people 60+: a household that includes at least one person aged 60 or over.

workless: a household containing at least one person of working age (between 16 and current state retirement age) where nobody is in employment (full or part time).

Housing Health and Safety Rating System (HHSRS):

The Housing Health and Safety Rating System (HHSRS) is a risk assessment tool used to assess potential risks to the health and safety of occupants in residential properties in England and Wales. It replaced the Fitness Standard in April 2006.

The purpose of the HHSRS assessment is not to set a standard but to generate objective information in order to determine and inform enforcement decisions. There are 29 categories of hazard, each of which is separately rated, based on the risk to the potential occupant who is most vulnerable to that hazard. The individual hazard scores are grouped into 10 bands where the highest bands (A–C representing scores of 1000 or more) are considered to pose Category 1 hazards. Local authorities have a duty to act where Category 1 hazards are present local authorities may take into account the vulnerability of the actual occupant in determining the best course of action.

For the purposes of the Decent Homes standard, dwellings posing a Category 1 hazard are non-decent on its criterion that a home must meet the statutory minimum requirements.

The EHS is not able to replicate the HHSRS assessment in full as part of a large scale survey. Its assessment employs a mix of hazards that are directly assessed by surveyors in the field and others that are indirectly assessed from detailed related information collected. For 2006 and 2007, the survey (the then English House Condition Survey) produced estimates based on 15 of the 29 hazards. From 2008, the survey is able to provide a more comprehensive assessment based on 26 of the 29 hazards – see Annex Table 10 of the EHS Headline Report 2008–09 for a list of the hazards covered. Previously published estimates of the HHSRS are not directly comparable with those in this report.

Estimates of decent homes will continue to be based on 15 hazards to maintain consistency with previous decent homes reporting and to avoid a break in the time series.

Income/equivalised income

Household incomes have been 'equivalised', that is adjusted (using the modified OECD scale) to reflect the number of people in a household. This allows the comparison of incomes for households with different sizes and compositions.

The EHS variables are modelled to produce a Before Housing Cost (BHC) income measure for the purpose of equivalisation. The BHC income variable includes: Household Reference Person and partner's income from benefits and private sources (including income from savings), income from other household members, housing benefit, winter fuel payment and the deduction of net council tax payment.

Local environment/Neighbourhood problems

'Local environment' or 'neighbourhood' problems from the survey are based on the professional surveyors' assessments of problems in the immediate environment of the home on a scale of 1 ('no problems') to 5 ('major problems'). These assessments are based on observed problems (in some cases verified with the resident) rather than any specialised measurement instruments or recourse to other environment data.

Upkeep: the upkeep, management or misuse of the private and public space and buildings (specifically, the presence of: scruffy or neglected buildings, poor condition housing; graffiti; scruffy gardens or landscaping; litter, rubbish or dumping; vandalism; dog or other excrement; nuisance from street parking; condition of road/ pavements and street furniture);

Traffic and transport: road traffic and other forms of transport (specifically the presence of: intrusive motorways and main roads; railway or aircraft noise; heavy traffic; and ambient air quality);

Utilisation: abandonment or non residential use of property (specifically, vacant sites; vacant or boarded up buildings; intrusive industry; or non conforming use of a residential area).

A dwelling is regarded as having a significant problem of a given type if it is assessed to have codes 4 or 5 of the scale in respect of any of the specific environmental problems assessed and grouped under that type.

Worst neighbourhood upkeep problems: This indicator is based on the 10% of households living in neighbourhoods with the highest (='worst') upkeep scores. Details of the scores and their construction (using factor analysis) are will be provided as part of the EHS technical notes. The focus on the 10% of households in neighbourhoods with the highest scores (='worst') is a nominal cut off and does not indicate an absolute measure as such. The indicators are used to identify where problems are likely to be most acute rather than to present definitive counts of how many households live in neighbourhoods with severe problems.

Major alterations

These are any of the items listed in section 15 of the form carried out at any time. The full definitions for all those listed from the surveyors manual appear below:

Conversion to more than one dwelling: when a large house has been subdivided into two or more separate houses standing side by side, or when a house has been subdivided into self-contained flats.

Conversion to HMO use: when a large house has been subdivided into two or more non-self contained flats.

Conversion from non-residential use: where a non-residential building e.g. barn, warehouse etc has been converted into houses or flats, possibly combined with some-non residential use in the building.

Two or more dwellings combined: where two or more houses have been 'knocked through' to provide a single larger house, where a house has been 're-converted' from flats into a single family house, or where two or more flats have been amalgamated.

Complete refurbishment/modernisation: where the dwelling/module has been 'gutted'. Internally, new services and amenities will have been installed and externally extensive works will have been carried out e.g. new roof, injection DPC, repairs/ replacement of windows, repointing etc. Work internally and externally must have been carried out at the same time, i.e. not piecemeal.

Rearrangement of internal space: houses where original internal partitions have been removed (e.g. to create through lounges or open-pan stairs) and/or new partitions have been constructed to create two or more rooms from one original room. For flats use this code where there has been some redistribution of space within the module e.g. small flats have been combined to provide larger flat(s), the space originally occupied by one or more flats has been used to provide a reception are/lift/common room etc.

Extension added for amenities: any extension must be a permanent structure i.e. must comply with building regulations at the time of its construction and be attached to and accessed via the house or module. Includes all amenities, whether primary or secondary, and utility rooms.

Extension added for living space: any extension which is a permanent structure as above. Includes building over attached garages or other flat-roofed additions. Does not include conservatories/sun lounges less than $5m^2$ in area.

Alteration of external appearance: there has been a major change, such as the complete replacement of original windows by a different type; the addition of porches, bays, Oriel or bowfronted windows; replacement of original materials with ones of a very different appearance, demolition or additional of chimney stacks, addition of roof lights or dormers, etc. Only includes changes to the building itself, not to its surroundings. Rendering or painting a brick face also counts, but simply painting the render a different colour does not. Does not include new roofing materials unless style of roof changed e.g. flat roof to pitched roof.

Over-roofing: if the house or module originally had a flat roof, and a pitched roof has been constructed on top of it. Does not include cases where the original roof structure has been removed and replaced for structural reasons.

Over-cladding: if any permanent cladding has been fixed to the exterior walls. Includes external insulation but does not include render or other common coatings.

Structure replaced: where the original loadbearing structure e.g. reinforced concrete columns, has been replaced by other loadbearing components. Parts of the old structure may remain in-situ but do not perform any loadbearing function.

Loft conversion: the loft space has been converted to habitable rooms.

Radon remedial works: pre1991 dwellings, in areas where 30% of dwellings contain radon levels above the action level of $200Bqm^3$. Dwellings in the following post codes are most at risk PL14, PL25, PL26, TQ7, TR13, TR14, TR15, TR16.

Regional areas

northern regions: includes the following Government Office Regions: North East, North West, and Yorkshire and the Humber.

south east regions: includes the following Government Office Regions: London and South East.

rest of England: includes the following Government Office Regions: East Midlands, West Midlands, South West and East of England.

Road types

This concerns the nature of the road on which the dwelling is located. This is an indication of the amount of through traffic and it's consequence for noise. For block set back from a main road, either by grass planting or small slip roads or both, describe the situation as that of the main road.

Major trunk: road a dual carriageway or very busy 'A' road. Expect continual traffic through the night.

Main road: A road linking different parts or suburbs or a town or city, or linking villages.

Side road: typically a road off a main road which is not a cul-de-sac or crescent. Some through traffic.

Cul-de-sac/crescent: road with no through traffic

Private road: unadopted road with access only for residents or approved persons

Unmade/no road: typically a track to a farmhouse or remote cottage.

SAP

The energy cost rating as determined by Government's Standard Assessment Procedure (SAP) and is used to monitor the energy efficiency of dwellings. It is an index based on calculated annual space and water heating costs for a standard heating regime and is expressed on a scale of 1 (highly inefficient) to 100 (highly efficient with 100 representing zero energy cost).

Serious Condensation or mould

See 'damp and mould growth'

Serious disrepair

Standardised basic repair costs of more then £25/m^2 using 2001 prices to enable trends over time.

Size

The total usable internal floor area of the home as measured by the surveyor, rounded to the nearest square metre. It excludes integral garages, balconies, stores accessed from the outside only and the area under partition walls. Dwellings are also grouped into the following five categories:

- less than 50m^2
- 50 to 69m^2
- 70 to 89m^2
- 90 to 109m^2
- 110m^2 or more.

Tenure

Four categories are used for most reporting purposes, and for some analyses these four tenure categories are collapsed into two groups:

private sector: includes:

owner-occupied: includes all households who own their own dwellings outright or buying them with a mortgage/loan; also includes shared-ownership schemes.

private rented: includes all households living in privately owned property which they do not own. Includes households living rent free, or in tied dwellings and tenants of housing associations that are not registered.

social rented: includes:

local authority: includes Arms Length Management Organisations (ALMOs) and Housing Action Trusts.

housing association: mostly Registered Social Landlords (RSLs), Local Housing Companies, co-operatives and charitable trusts.

Vacant dwellings

The assessment of whether or not a dwelling is vacant is made at the time of the interviewer's visit. Clarification of vacancy is sought from neighbours. Surveyors are required to gain access to vacant dwellings and undertake full inspections.

Working Neighbourhood Fund (WNF)

This replaced the NRF from April 2008. The WNF is a new dedicated fund to support councils and communities in developing more concentrated, concerted, community-led approaches to getting people in the most deprived areas of England back to work.

Workless

See 'Household Groups'.

Worst neighbourhood upkeep problems

See 'Local environment/neighbourhood problems'

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